SPATIAL VARIABILITY OF WATER QUALITY IN WABAMUN LAKE (JULY 2002)

DATA REPORT

Alberta Environment

Spatial Variability Of Water Quality In Wabamun Lake (July 2002)

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Alberta Environment

September 2003

W0302

Pub. No: T/694
ISBN: 0-7785-2505-8 (Printed Edition)
ISBN: 0-7785-2502-3 (On-Line Edition)
Web Site: http://www3.gov.ab.ca/env/info/infocentre/publist.cfm

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ACKNOWLEDGEMENTS

This data report has benefited from the review comments of Leigh Noton (Environmental Monitoring and Evaluation Branch, Head Water Team) and Richard Casey (Science and Standards Division).

Many staff members from Northern Region participated in the sampling program, including John Willis, Chris Ware, Monica Polutranko, Rick Pickering, Mike Smilski, Mike Bilyk, Shelly Manchur, Brian Jackson, Fred Richer, and Chris Rickard.

The Analytical Chemistry Laboratory, Alberta Research Council, Vegreville analysed the water samples.

Doreen LeClair, and Bridgette Halbig (Environmental Monitoring and Evaluation Branch) assisted in data management and report preparation.

1.0 INTRODUCTION

Alberta Environment (AENV) has maintained a water quality monitoring program on Wabamun Lake for over 20 years (Casey 2003). It is designed to evaluate overall water quality of the lake, including temporal trends in trophic status indicators and major ion chemistry. The sampling program integrates water quality of the lake's open water. However, it does not depict possible differences in east and west basin water quality or provide information on water quality in various bays and along the littoral zone.

Potential sources of spatial difference in lake water quality include natural sources and point sources. Vertical variability in the water column is a natural occurrence in lakes and is influenced by temperature gradients and light attenuation in the water column. In turn these gradients influence biological activities and water chemistry. The Wabamun Power Plant cooling water discharges and the Wabamun Lake Water Treatment Plant discharges are two point sources which could result in horizontal variability in the lake, the former because of temperature differences, the latter because of differences in major ion concentrations between the lake and discharge water.

The objective of the sampling program initiated by AENV in July 2002 was to scope out the degree of spatial variability in Wabamun Lake water quality. Eight other lakes were also sampled to allow comparisons of the intra- and inter-lake variability in water quality.

This document provides a compilation of the data and it highlights the major findings.

2.0 METHODS

2.1 Sampling Methods

2.1.1 Wabamun Lake

A grid with nodes 1 km apart was superimposed on a 1:50,000 topographic map of the lake. Latitude and longitude of nodes, or sampling sites, is documented in Table 1. North south transects are numbered sequentially from west to east. Sites within a transect are identified by the transect number and sequential numbers from south to north (Figure 1). Sampling sites cover the entire lake surface, including bays and littoral areas.

Sampling started on July 22 and was completed on July 24, 2002. Sampling was initiated in the west basin and proceeded in a systematic fashion from west to east. GPS readings were used to locate the sampling sites. Throughout the sampling period winds were calm, skies clear and air temperature high. The Wabamun Lake Water Treatment Plant was not operating at full capacity during this survey.

Water quality attributes sampled at each site vary as shown in Figure 2.

- A water quality multi-probe was used to measure pH, temperature, conductivity, DO and redox potential at all 77 sites near the surface, at mid water column depth, and 0.5 m above the sediment.

- Euphotic, vertically integrated composite samples of phosphorus, chlorophyll-*a* and sulphate were collected at the 77 sampling sites using tygon tubing equipped with a foot valve. Euphotic depth is defined as depth where 1% of light intensity recorded just below the surface is measured.

- Major ions and related variables were analysed in 44 of the euphotic composite samples.

- To remain consistent with previous metal analyses on Wabamun Lake (Casey 2003), metals, low level Hg and sulphide were analysed in samples collected 0.5 m above the sediments at 29 sites. Samples were collected with tygon tube equipped with a foot valve and peristaltic pump. Ultra-clean collection and handling procedures were used for mercury.

- Pesticides were analysed from sub-surface grab samples collected at four sites.

- Triplicates and blanks were collected on each sampling day.

    - For euphotic samples, these triplicates are actually true split samples derived from the composite sample; these samples can be used to test the lab's ability to replicate measurements.

- For sulphide, metals and low level Hg, triplicates are sequential samples. Although they too can be used to test the lab's ability to replicate samples, natural variability could have been introduced.
- Field blank samples ("RO" or "nanopure" water from the analytical laboratories transferred to sample bottles in the field) were collected on each day of sampling. No blanks or triplicates were collected for pesticide samples.
- Sampling protocols are described in Alberta Environment (2002).

2.1.2 Other Lakes

The following eight other lakes were sampled in August and September 2002: Amisk, Bonnie, Gull, Isle, Ste. Anne, Pigeon, Sylvan, and Wizard. Bonnie, Gull, Ste. Anne, Isle, Pigeon, Sylvan and Wizard lakes are shallow lakes typical for central Alberta. Gull, Pigeon and Sylvan are most similar to Wabamun Lake because of their comparable watershed to lake area ratio, mean depth and trophic status. Furthermore, Pigeon and Sylvan lakes are located in the same ecoregion as Wabamun Lake (i.e., Boreal Mixed Wood, Table 2). Amisk is most dissimilar because of its greater depth.

Lakes were sampled at their deepest location for phosphorus, chlorophyll-*a*, selected major ions, hardness, total dissolved solids, total suspended solids, sulphide and metals, including low level Hg following. Sampling protocols were the same as for Wabamun Lake.

2.2 Laboratory Analyses

All water analyses, except chlorophyll-*a*, were carried out at the Analytical Chemistry Laboratory of the Alberta Research Council, Vegreville. Chlorophyll-*a* was analyzed by the Monitoring Branch Laboratory, AENV in Edmonton. Table 3 lists all variables that were measured and their associated method detection limits and valid method variable code (VMV). Detailed analytical methods descriptions associated with the VMV are available from Environment Canada (no date).

Twenty-nine metals were measured by inductively coupled plasma mass spectrometry (ICP-MS) as total recoverable or extractable metals, except for total mercury which was analysed using ultra-clean procedures and cold vapour atomic absorption spectrometry (CV-AAS). Forty-two pesticides commonly used in Alberta were measured by Gas Chromatography/Mass Spectrometry/Ion trap (GC-MS Ion Trap).

2.3 Data Presentation

Data were compared to the most stringent of guidelines established by AENV, the Canadian Council of Ministers of the Environment (CCME), and the Unites States Environmental Protection Agency (USEPA) (AENV 1999).

For selected variables, data have been plotted on a map of Wabamun Lake to illustrate spatial variability across the lake. The coefficient of variation was used to depict variability numerically.

3.0 RESULTS

Raw water quality data, including QA/QC data, are presented in Appendices 1 to 5. Basic statistics for Wabamun and other lakes' data are summarized in Tables 4 and 5.

Spatial variability of measurements across Wabamun Lake is shown in Figures 3 to 15 and expressed numerically as the coefficient of variation of the measurements (Table 4 and 6).

Wabamun lake measurements are in the general range of measurements recorded for other lakes sampled in 2002 (Table 4).

3.1 Comparison of Lake Data with Guidelines

- Some pH, DO and sulphide measurements from Wabamun Lakes and other lakes sampled in 2002 exceeded surface water quality guidelines (Table 5). Phytoplankton photosynthesis influences diurnal cycles of pH and DO and measurements above the upper guideline value are common in fairly productive lakes during the summer. In such lakes and particularly during periods of calm winds and high temperatures which lead to some vertical stratification, low DO levels near the sediments are not uncommon. The presence of sulphide is associated with anoxic conditions. Sulphide levels above the USEPA guidelines were encountered at some of the deeper west basin sites in Wabamun Lake and in Wizard, Bonnie and Amisk lakes.

- Three lakes (Isle, Wizard and Bonnie) had phosphorus levels above the Alberta Water Quality Guideline Table 5).

- Cadmium and selenium levels were slightly above the CCME guideline in a small number of Wabamun Lake samples. In both cases the detection limit is close to the guideline value (Table 3 and 5); considering this and the magnitude of the coefficient of variation observed for triplicate samples (Table 6) it is possible that analytical variability contributed to non-compliance.

- Arsenic was above the CCME guideline in the water sample taken from Gull Lake. AENV has historical arsenic data for Gull Lake that date back to 1979; these data indicate that arsenic concentrations were above the guideline.

3.2 Variability of Measurements Across the Lake

In general, variability in water quality measurements was very low across Wabamun Lake as shown for selected variables in Figures 3 to 15 and as depicted in the relatively low coefficient of variation (Table 6). Not surprisingly, variability within Wabamun Lake was lower than variability among lakes (Table 4). At the time of sampling, no plume effects were apparent in water chemistry near the Wabamun Water Treatment Plant or ash lagoon outfalls. However, Kapasiwin Bay, which receives the cooling water from the Wabamun Power Plant, had higher temperatures than the rest of the lake (Figure 3).

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Table 1 Water sampling locations for Wabamun Lake and other lakes sampled in 2002

Site Name	Latitude in Decimal Degrees	Longitude in Decimal Degrees	Site Name	Latitude in Decimal Degrees	Longitude in Decimal Degrees
WABAMUN 2002					
Wabamun Grid 1-1-A	53.553060	114.721670	Wabamun Grid 11-3	53.541110	114.571390
Wabamun Grid 1-2	53.561940	114.721110	Wabamun Grid 11-4	53.550000	114.570830
Wabamun Grid 2-1	53.552780	114.706670	Wabamun Grid 11-5	53.559170	114.570280
Wabamun Grid 2-2	53.561670	114.706110	Wabamun Grid 12-1	53.522780	114.557220
Wabamun Grid 2-3	53.570830	114.705560	Wabamun Grid 12-2	53.531670	114.556940
Wabamun Grid 3-1	53.543610	114.691940	Wabamun Grid 12-3	53.540830	114.556390
Wabamun Grid 3-2	53.552500	114.691390	Wabamun Grid 12-4	53.549720	114.555830
Wabamun Grid 3-3	53.561390	114.691110	Wabamun Grid 12-5	53.558610	114.555280
Wabamun Grid 3-4	53.570560	114.690560	Wabamun Grid 13-1	53.513610	114.542780
Wabamun Grid 4-1	53.544110	114.676940	Wabamun Grid 13-2-A	53.522500	114.542220
Wabamun Grid 4-2	53.552220	114.676390	Wabamun Grid 13-3	53.531390	114.541670
Wabamun Grid 4-3	53.561110	114.675830	Wabamun Grid 13-4	53.540560	114.541110
Wabamun Grid 4-4	53.570000	114.675560	Wabamun Grid 13-5	53.549440	114.540830
Wabamun Grid 4-5	53.578610	114.675000	Wabamun Grid 14-1	53.495280	114.528890
Wabamun Grid 5-1	53.542780	114.661940	Wabamun Grid 14-2	53.504170	114.528330
Wabamun Grid 5-2	53.551940	114.661390	Wabamun Grid 14-3	53.513330	114.527780
Wabamun Grid 5-3	53.560830	114.660830	Wabamun Grid 14-4	53.522220	114.527220
Wabamun Grid 5-4-A	53.569720	114.660280	Wabamun Grid 14-5	53.531110	114.526670
Wabamun Grid 6-1-A	53.542500	114.646670	Wabamun Grid 14-6	53.540280	114.526110
Wabamun Grid 6-2	53.551670	114.646390	Wabamun Grid 14-7	53.549170	114.525560
Wabamun Grid 6-3	53.560560	114.645830	Wabamun Grid 15-1	53.503890	114.513060
Wabamun Grid 7-1	53.542220	114.631670	Wabamun Grid 15-2	53.512780	114.512780
Wabamun Grid 7-2	53.551390	114.631110	Wabamun Grid 15-3	53.521940	114.512220
Wabamun Grid 7-3	53.560280	114.630560	Wabamun Grid 15-4	53.530830	114.511670
Wabamun Grid 7-4	53.569170	114.630280	Wabamun Grid 15-5	53.539720	114.511110
Wabamun Grid 8-1	53.541940	114.616640	Wabamun Grid 15-6-A	53.548890	114.510560
Wabamun Grid 8-2	53.551110	114.616110	Wabamun Grid 16-1	53.521670	114.496940
Wabamun Grid 8-3-A	53.560000	114.615560	Wabamun Grid 16-2	53.530560	114.496670
Wabamun Grid 8-4	53.568890	114.615000	Wabamun Grid 16-3	53.539440	114.496110
Wabamun Grid 9-1	53.532780	114.601940	Wabamun Grid 16-4-A	53.548610	114.495560
Wabamun Grid 9-2	53.541670	114.601670	Wabamun Grid 17-1	53.539170	114.480830
Wabamun Grid 9-3	53.550560	114.601110	Wabamun Grid 18-1-A	53.538890	114.465830
Wabamun Grid 9-4	53.559720	114.600560	Wabamun Grid 18-2	53.547780	114.465280
Wabamun Grid 10-1	53.532500	114.586940	Wabamun Grid 19-1	53.529720	114.451390
Wabamun Grid 10-2	53.541390	114.586390	Wabamun Grid 19-2	53.538610	114.450830
Wabamun Grid 10-3	53.550280	114.585830	Wabamun Grid 19-3	53.547500	114.450280
Wabamun Grid 10-4	53.559440	114.585560	Wabamun Grid 20-1	53.561110	114.449170
Wabamun Grid 11-1	53.523060	114.572500	Wabamun Grid 20-2	53.556670	114.449720
Wabamun Grid 11-2	53.532220	114.571940			
LAKES 2002					
Amisk	54.616110	112.623060	Lake Isle	53.633330	114.733330
Bonnie	54.150000	111.875000	Pigeon	53.000000	114.016670
Gull	52.533330	113.983330	Sylvan	52.350000	114.166670
Lac Ste. Anne	53.708330	114.400000	Wizard	53.116670	113.850000

Table 2 Characteristics of lakes sampled in summer 2002 and in 1993-94

Lake	Drainage Basin	Ecoregion	Lake Drainage Basin (km^2)	Lake Area (km^2)	Lake Basin/ Lake Area	Mean Depth (m)	Trophic Status
Amisk	Beaver	Boreal Mixedwood	234	5.15	0.02	15.5	H-E
Bonnie	North Saskatchewan	Boreal Mixedwood-Aspen Parkland	49.6	3.77	0.08	3.1	H-E
Gull	Red Deer	Boreal Mixedwood-Aspen Parkland	206	80.6	0.39	5.4	M
Lac Ste Anne	North Saskatchewan	Boreal Mixedwood	619	54.5	0.09	4.8	E
Lake Isle	North Saskatchewan	Boreal Mixedwood	246	23	0.09	4.1	H-E
Pigeon	Battle	Boreal Mixedwood	187	96.7	0.52	6.2	E
Sylvan	Red Deer	Boreal Mixedwood	102	42.8	0.42	9.6	M
Wabamun	North Saskatchewan	Boreal Mixedwood	259	81.8	0.32	6.3	E
Wizard	North Saskatchewan	Boreal Mixedwood	29.8	2.48	0.08	6.2	E

Notes:
Data and ecoregion classification listed are from Mitchell and Prepas (1990)

Trophic Status (lake productivity): O = Oligotrophic (low), M = Mesotrophic (moderate), E = Eutrophic (high), H-E = Hypereutrophic (very high)

Table 3 List of water quality measurements performed on Wabamun Lake in July 2002

VMV	Variable	Detection Limit	Unit
Field Measurements			
100922	Oxygen Dissolved (Field Meter)	NA	mg/L
100923	pH (Field)	NA	pH units
100924	Specific Conductance (Field)	NA	uS/cm
2031	Redox Potential	NA	mV
100925	Temperature Water	NA	deg C
Major Ions and Nutrients			
10602	Hardness Total (calc.) as CaCO3	5	mg/L
15421	Phosphorus Total (P)	0.008	mg/L
16306	Sulphate Dissolved	6	mg/L
2041	Specific Conductance (Lab)	2	uS/cm
207	Total Dissolved Solids	0.1	mg/L
6201	Bicarbonate (calc.)	5	mg/L
6301	Carbonate (calc.)	5	mg/L
7105	Nitrogen Dissolved NO2+NO3	0.02	mg/L
7205	Nitrogen Disssolved Nitrite	0.016	mg/L
9107	Fluoride	0.04	mg/L
102616	Silica Reactive	0.1	mg/L
10301	pH (Lab)	NA	pH units
100536	Total Dissolved Solids (calc.)	0.1	mg/L
10101	Alkalinity Total as CaCO3	4	mg/L
101484	Sulphide	0.004	mg/L
10151	Alkalinity Phenolphthalein as CaCO3	4	mg/L
101838	Calcium	0.1	mg/L
101847	Magnesium	0.01	mg/L
102085	Sodium	1.5	mg/L
102086	Potassium	0.1	mg/L
102087	Chloride	0.6	mg/L
Metals			
101887	Silver, Total (Ag)	0.008	µg/L
101888	Aluminum, Total (Al)	1	µg/L
101889+101939	Arsenic, Total (As)	0.3	µg/L
101891	Barium, Total (Ba)	1	µg/L
101892	Beryllium, Total (Be)	0.1	µg/L
101893	Bismuth, Total (Bi)	0.003	µg/L
101894	Calcium, Total (Ca)	0.2	mg/L
101895	Cadmium, Total (Cd)	0.02	µg/L
101896	Chloride	0.2	mg/L
101899	Copper, Total (Cu)	0.07	µg/L
101902	Lithium, Total (Li)	0.4	µg/L
101904	Manganese, Total (Mn)	1	µg/L
101905	Molybdenum, Total (Mo)	0.08	µg/L
101912	Lead, Total (Pb)	0.008	µg/L
101914	Antimony, Total (Sb)	0.02	µg/L
101915+101930	Selenium, Total (Se)	0.8	µg/L
101917	Tin, Total (Sn)	0.01	µg/L
101919	Thorium, Total (Th)	0.005	µg/L
101920	Titanium, Total (Ti)	0.6	µg/L
101921	Thallium, Total (Tl)	0.005	µg/L
101922	Uranium, Total (U)	0.02	µg/L
101923+101935	Vanadium, Total (V)	0.06	µg/L
101924	Zinc, Total (Zn)	0.1	µg/L
101925	Boron, Total (B)	9	µg/L

Table 3 List of water quality measurements performed on Wabamun Lake in July 2002 (continued)

VMV	Variable	Detection Limit	Unit
101926	Chromium, Total (Cr)	0.05	µg/L
101931	Strontium, Total (Sr)	5	µg/L
101936+102082	Iron, Total (Fe)	3	µg/L
101937	Cobalt, Total (Co)	0.008	µg/L
101938	Nickel, Total (Ni)	0.05	µg/L
101979	Mercury, Total (Hg)	1.2	ng/L
Pesticides			
100667	2,4-D	0.005	µg/L
100668	2,4-DB	0.005	µg/L
100669	DICHLORPROP(2,4-DP)	0.005	µg/L
100670	ALPHA-BENZENEHEXACHLORIDE	0.005	µg/L
100671	ALPHA-ENDOSULFAN	0.005	µg/L
100672	GAMMA-BENZENEHEXACHLORIDE (LINDANE)	0.005	µg/L
100673	METHOXYCHLOR (P,P'-METHOXYCHLOR)	0.03	µg/L
100674	ATRAZINE	0.005	µg/L
100675	100675 BROMACIL ug/L	0.03	µg/L
100676	BROMOXYNIL	0.005	µg/L
100677	CARBATHIIN (CARBOXIN)	0.1	µg/L
100678	CYANAZINE	0.05	µg/L
100679	DIAZINON	0.005	µg/L
100681	DICLOFOP-METHYL	0.02	µg/L
100682	DISULFOTON (DI-SYSTON)	0.2	µg/L
100683	DIURON	0.2	µg/L
100684	CHLORPYRIFOS (DURSBAN)	0.005	µg/L
100685	ETHALFLURALIN (EDGE)	0.005	µg/L
100686	ETHION	0.1	µg/L
100687	GUTHION	0.2	µg/L
100688	CLOPYRALID (LONTREL)	0.02	µg/L
100689	MALATHION	0.05	µg/L
100690	MCPA	0.005	µg/L
100691	MCPB	0.02	µg/L
100692	MCPP (MECOPROP)	0.005	µg/L
100693	PICLORAM (TORDON)	0.005	µg/L
100694	PHORATE (THIMET)	0.005	µg/L
100695	TERBUFOS	0.03	µg/L
100696	TRIALLATE (AVADEXBW)	0.005	µg/L
100697	TRIFLURALIN(TREFLAN)	0.005	µg/L
102088	IMAZAMETHABENZ-METHYL	0.05	µg/L
102609	DESETHYL ATRAZINE	0.05	µg/L
102610	DEISOPROPYL ATRAZINE	0.05	µg/L
102611	QUINCLORAC	0.005	µg/L
102612	IMAZETHAPYR	0.02	µg/L
102613	FENOXAPROP-P-ETHYL	0.04	µg/L
102614	PYRIDABEN	0.02	µg/L
102618	DIMETHOATE (CYGON)	0.05	µg/L
103141	IMAZAMOX	0.02	µg/L
103639	DICAMBA (BANVEL)	0.005	µg/L
103824	SIMAZINE	0.01	µg/L
103825	TRICLOPYR	0.01	µg/L
99887	4-CHLORO-2-METHYLPHENOL	0.01	µg/L
99888	2,4-DICHLOROPHENOL	0.01	µg/L

Note: VMV = Valid Method Variable code

Table 4 Summary of summer 2002 water quality data for Wabamun Lake and eight other lakes

Major ions and nutrient concentrations (mg/L) for Wabamun Lake and eight other lakes sampled in summer 2002

	Chloro phyll-*a*	TP	(NO_3^-+ NO_2^-)-N	(NO_2^-) -N	Hardness Total as CaCO3	Alkalinity Total as CaCO3	Alkalinity Phenol phthalein as CaCO3	TDS	CO_3^{--}	SO_4^{--}	HCO_3^-	F^-	Silica	Na^+
Wabamun Lake														
# of samples	77	77	44	44	44	44	44	44	44	77	44	44	44	44
# of samples with detections	77	77	21	44	44	44	44	44	44	77	44	44	44	44
Mean (all detections)	**7**	**0.021**	**0.007**	**0.002**	**132**	**218**	**10.2**	**304**	**12**	**51**	**241**	**0.38**	**2.6**	**64**
Maximum	9.1	0.026	0.015	0.004	142	221	28.0	308	33	56	258	0.39	4.2	65.7
Standard Deviation	2	0.002	0.003	0.001	7	6	3.6	5	4	2	15	0.01	0.3	1
Coefficient of variation (%)	23.00	10.14	40.65	36.52	5.32	2.52	34.83	1.62	34.42	2.94	6.11	1.53	10.47	2.01
Other Lakes Sampled in 2002														
# of samples (one per lake)	8.0	8			8			8		8		7		8
# of samples with detections	8.0	8			8			8		8		7		8
Mean (all detections)	**34.0**	**0.064**			**183**			**368**		**32**		**0.14**		**56.3**
Maximum	98.2	0.193			348			915		95		0.19		217.0
Standard Deviation	34.0	0.061			101			258		38		0.03		66.9
Coefficient of variation (%)	100.1	96.29			55.00			70.17		118.95		17.99		118.82
Gull Lake	12.7	0.036			322			915		89		0.19		217
Sylvan Lake	2.1	0.012			212			390		15		0.13		69.2
Wizard Lake	73.6	0.061			96			207		5		0.16		33.6
Isle Lake	26.2	0.114			111			231		11		0.13		26.4
Lac Ste. Anne	32.6	0.042			117			190		10		0.14		20.8
Bonnie Lake	98.2	0.193			348			580		95				39.4
Pigeon Lake	15.6	0.027			112			194		7		0.12		18.5
Amisk Lake	10.9	0.023			146			240		21		0.12		25.5

Sulphide and metals data for Wabamun Lake and eight other lakes sampled in summer 2002 (concentrations in µg/L for all metals, except Hg which is in ng/L)

	S--	Ag	Al	As	Ba	Be	Bi	Cd	Cu	Li	Mn	Mo	Pb	Sb
Wabamun Lake														
# of samples	29	29	29	29	29	29	29	29	29	29	29	29	29	29
# of samples with detections	16	8	29	29	29	6	12	13	29	29	29	29	29	29
Mean (all detections)	**0.002**	**0.010**	**29.5**	**3.2**	**117.9**	**0.10**	**0.010**	**0.04**	**0.85**	**34.8**	**68.50**	**5.0**	**0.058**	**0.22**
Maximum	0.006	0.016	68	3.7	142	0.14	0.019	0.06	1.30	37.2	161	5.3	0.087	0.28
Standard Deviation	0.002	0.003	14.0	0.2	12.1	0.04	0.003	0.01	0.13	1.1	36.40	0.2	0.014	0.03
Coefficient of variation (%)	80.43	34.21	47.26	7.00	10.29	38.68	34.29	33.50	15.11	3.02	53.14	3.84	24.67	12.57
Other Lakes Sampled in 2002														
# of samples	8	8	8	8	8	8	8	8	8	8	8	8	8	8
# of samples with detections	5	0	8	8	8	0	0	4	8	8	8	8	6	8
Mean (all detections)	**0.154**		**22.1**	**2.9**	**73.2**			**0.03**	**0.35**	**20.7**	**221.00**	**1.45**	**0.07**	**0.11**
Maximum	0.754		69	8.6	97.6			0.03	1.03	43.3	716	5.21	0.15	0.33
Standard Deviation	0.336		21.5	2.6	17.1			0.00	0.29	14.0	275.08	1.75	0.06	0.10
Coefficient of variation (%)	218.16		97.05	89.71	23.29			8.70	81.50	67.69	124.47	120.58	84.02	91.35
Gull Lake	L0.001	L0.005	69	8.6	37.3	L0.04	L0.005	0.03	1.03	42.1	2.03	5.21	0.117	0.33
Sylvan Lake	L0.001	L0.005	34.4	2.6	70.4	L0.04	L0.005	L0.02	0.39	19.3	4.35	2.84	0.063	0.12
Wizard Lake	0.007	L0.005	11.7	1.39	78.4	L0.04	L0.005	L0.02	0.2	10.7	716	0.47	0.029	0.09
Isle Lake	0.002	L0.005	17.8	1.58	78.7	L0.04	L0.005	0.03	0.24	13.6	311	0.51	0.019	0.04
Lac Ste Anne	0.001	L0.005	4.8	1.3	67.2	L0.04	L0.005	0.025	0.2	12.7	56.1	0.46	0.019	0.08
Bonnie Lake	0.005	L0.005	24.9	4.43	97.6	L0.04	L0.005	L0.02	0.35	43.3	65.9	1.38	0.15	0.08
Pigeon Lake	L0.001	L0.005	6.82	1.93	79	L0.04	L0.005	0.03	0.18	7.7	65.6	0.57	L0.01	0.08
Amisk Lake	0.754	L0.005	7.6	1.02	77.3	L0.04	L0.005	L0.02	0.21	16.2	547	0.15	L0.01	0.02

Table 4 Summary of summer 2002 water quality data for Wabamun Lake and eight other lakes (continued)

Major ions and nutrient concentrations (mg/L) for Wabamun Lake and eight other lakes sampled in summer 2002

	K^+	Cl^-	Ca^{++}	Mg^{++}
Wabamun Lake				
# of samples	44	44	44	44
# of samples with detections	44	44	44	44
Mean (all detections)	**9.5**	**7.6**	**22.7**	**18**
Maximum	9.8	9.3	24.3	20
Standard Deviation	0.1	0.3	2.3	1
Coefficient of variation (%)	1.38	3.75	10.00	4.70
Other Lakes Sampled in 2002				
# of samples (one per lake)	8	8	8	8
# of samples with detections	8	8	8	8
Mean (all detections)	**10.1**	**4.3**	**24.3**	**30**
Maximum	20.9	6.7	38.8	72
Standard Deviation	6.5	1.7	8.3	25
Coefficient of variation (%)	64.98	40.16	34.12	83.89
Gull Lake	20.9	5.2	10.4	72
Sylvan Lake	7.3	2.4	17.9	41
Wizard Lake	5.6	4.1	21.9	10
Isle Lake	8.0	6.2	27.9	10
Lac Ste. Anne	8.8	5.0	26.1	13
Bonnie Lake	19.8	6.7	38.8	61
Pigeon Lake	5.9	2.1	23.3	13
Amisk Lake	4.1	2.9	27.9	18

Sulphide and metals data for Wabamun Lake and eight other lakes sampled in summer 2002 (concentrations in µg/L for all metals, except Hg which is in ng/L)

	B	Co	Cr	Fe	Hg	Ni	Se	Sn	Sr	Th	Ti	Tl	U	V	Zn
Wabamun Lake															
# of samples	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
# of samples with detections	29	21	29	22	6	0	16	0	29	26	29	2	29	29	29
Mean (all detections)	**921**	**0.03**	**0.35**	**9.8**	**2.1**		**0.82**		**284**	**0.013**	**1.2**	**0.009**	**0.53**	**1.25**	**2.28**
Maximum	958	0.07	0.59	25	2.9	0	1.3		300	0.050	2	0.011	0.58	1.44	5.70
Standard Deviation	30	0.01	0.12	5.9	0.5		0.33		25	0.010	0.4	0.004	0.03	0.13	1.14
Coefficient of variation (%)	3.24	37.94	33.90	60.06	25.47		40.21		8.66	79.14	36.40	41.59	6.41	10.59	50.09
Other Lakes Sampled in 2002															
# of samples	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
# of samples with detections	8	6	2	6	1	3	1	1	8	5	8	1	8	7	8
Mean (all detections)	**70.4**	**0.06**	**0.30**	**62**	**0.8**	**0.26**	**0.62**	**0.6**	**214**	**0.029**	**2.8**	**0.018**	**0.84**	**0.60**	**1.06**
Maximum	166	0.12	0.44	198	0.8	0.53	0.62	0.6	278	0.080	4.4	0.018	3.32	2.31	2.06
Standard Deviation	49.2	0.04	0.21	68		0.23			65	0.031	0.8		1.13	0.81	0.61
Coefficient of variation (%)	69.85	68.07	69.51	110.58		88.03			30.44	106.59	27.98		134.66	134.76	57.53
Gull Lake	166	0.09	0.44	44	0.8	0.53	L0.4	L0.1	73.3	L0.003	3.5	L0.003	3.32	2.31	1
Sylvan Lake	59	0.06	L0.08	10	L0.6	L0.06	L0.4	L0.1	253	0.08	2.4	0.018	1.73	0.94	0.67
Wizard Lake	35	0.03	L0.08	198	L0.6	0.15	L0.4	L0.1	230	0.013	2.3	L0.003	0.43	0.059	1.9
Isle Lake	46	L0.02	L0.08	51	L0.6	0.11	L0.4	L0.1	206	0.01	3.1	L0.003	0.239	0.16	1.1
Lac Ste Anne	51	L0.02	L0.08	L3	L0.6	L0.06	L0.4	0.6	191	L0.003	2.1	L0.003	0.17	0.1	0.47
Bonnie Lake	123	0.12	0.15	25	L0.6	L0.06	L0.4	L0.1	278	0.005	4.4	L0.003	0.48	0.45	2.06
Pigeon Lake	19.3	0.03	L0.08	L3	L0.6	L0.06	0.62	L0.1	271	L0.003	2.5	L0.003	0.116	L0.04	0.7
Amisk Lake	63.7	0.02	L0.08	43	L0.6	L0.06	L0.4	L0.1	206	0.038	2.3	L0.003	0.231	.0.2	0.56

Table 5 Comparison of water quality data from Wabamun Lake and eight other lakes sampled in 2002 with guidelines

Variable	Guideline[1]	Comments	Wabamun		Eight Other Lakes	
			Range n = 213 field n = 33 others	Number Non-Compliant Measurements[2]	Range n = 8	Number Non-Compliant Measurements[3]
PH	6.5 to 9.0		7.72 -9.46	9 are > 9.0	7.68 - 9.18	5 are >9.0
DO	5.5-9.5 mg/L		0.41-14.84	24 are >9.5 22 are <5.5	0.28 - 11.8	7 are <5.5 5 are >9.5
Total Phosphorus	0.05 mg/L	AENV	0.016-0.026	0	0.023 - 0.193	3
Sulphide	0.002 mg/L	USEPA	0.001-0.006	4	L0.001 - 0.754	3
Silver	0.1 ug/L		0.0052 - 0.016	0	L0.005	0
Aluminum	100 ug/L	pH>6.5 and Ca >4 mg/L	7.7-68	0	4.8 - 69	0
Arsenic	5 ug/L		2.7-3.7	0	1.02 - 8.6	1
Cadmium	0.04 ug/L	125<hardness<150	L0.02-0.06	3	L0.02 - 0.03	0
Chloride	230 ug/L	USEPA	7.4-9.3	0	2.23 - 6.2	0
Copper	3 ug/L	120<$CaCO_3$<180	0.58-1.3	0	0.18 - 1.03	0
Molybdenum	73 ug/L		4.4-5.3	0	0.15 - 5.21	0
Lead	4 ug/L	120<$CaCO_3$<180	0.038-0.087	0	L0.01 - 0.117	0
Selenium	1 ug/L		L0.4 -1.3	6	L0.4 - 0.62	0
Thallium	0.8 ug/L		0.006-0.011	0	L0.003 - 0.018	0
Zinc	30 ug/L		0.75-5.7	0	0.47 - 2.06	0
Chromium	1 ug/L	i.e., CCME for Cr6+	0.17-0.59	0	L0.08 - 0.44	0
Iron	300 ug/L		L3-25	0	L3 - 198	0
Nickel	110 ug/L	120<$CaCO_3$<180	L0.06	0	L0.06 - 0.53	0
Mercury	5 ng/L	AENV draft	L0.6-2.9	0	L0.6 - 0.8	0
2,4-D	4 ug/L		L0.005 - 0.015	0	NA	
MCPA	2.6 ug/L		L0.005 - 0.003	0	NA	

[1] Guidelines are CCME guidelines unless specified differently in comments. Where hardness CaCO3, Ca and pH influence guidelines, guideline values apply to Wabamun Lake, adjustments were made for other lakes as required

[2] Number of samples for DO and pH is 213; number of samples for other measurements is 33

[3] Number of samples for DO and pH is 24; number of samples for other measurements is 8

NA = Not Analyzed

Table 6 Variability in split water samples and variability among Lake Wabamun water samples

	Total Hardness	TP	SO4	Specific Cond.	HCO3	CO3	(NO2+ NO3)-N	NO2-N	F	Silica	pH (lab)	TDS	Total Alkalinity	Na	K
Coefficient of variation % (CV%) in sets of 3 split samples															
set July 22	1.36	5.00	1.14	0.11	0.70	5.09	48.60	0.00	0.00	0.00	0.12	0.57	0.00	1.23	1.21
set July 23	0.43	2.66	1.92	0.11	0.24	0.00	0.00	34.64	1.51	2.17	0.18	0.50	0.00	1.02	3.31
set July 24	1.54	8.22	0.00	0.22	0.00	0.00	0.00	34.64	0.00	2.11	0.07	0.76	0.00	3.17	0.61
Mean CV%	1.11	5.29	1.02	0.15	0.31	1.70	16.20	23.09	0.50	1.43	0.12	0.61	0.00	1.81	1.71
N	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
N>25%	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Variability in Wabamun Lake															
Mean	132	0	51	521	241	12	0	0	0	3	9	304	218	64	9
SD	7	0	2	7	15	4	0	0	0	0	0	5	6	1	0
CV%	5.3	10.1	2.9	1.3	6.1	34.4	40.6	36.5	1.5	10.5	1.4	1.6	2.5	2.0	1.4

	$S^{=}$	Ag	Al	As	Ba	Be	Bi	Cd	Cu	Li	Mn	Mo	Pb	Sb	Se
Coefficient of variation % (CV%) in sets of 3 split samples															
set July 22	16.67	121.24	4.86	1.97	0.91	78.73	46.81	55.19	10.54	0.29	1.44	3.19	33.03	13.64	40.00
set July 23	0.00	0.00	19.42	3.03	0.94	108.25	0.00	0.00	0.66	1.26	1.65	2.04	5.29	0.00	24.05
set July 24	0.00	0.00	20.67	9.94	1.32	129.90	0.00	69.28	23.99	0.57	2.83	2.28	14.25	4.35	0.00
Mean CV%	5.56	40.41	14.98	4.98	1.06	105.63	15.60	41.49	11.73	0.71	1.97	2.50	17.52	5.99	21.35
N	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
N>25%	0	1	0	0	0	3	1	2	0	0	0	0	0	0	1
Variability in Wabamun Lake															
Mean	0.002	0.010	29.5	3.2	118	0.10	0.010	0.04	0.85	34.8	68.5	5.0	0.058	0.22	0.8
SD	0.002	0.003	14.0	0.2	12	0.04	0.003	0.01	0.13	1.1	36.4	0.2	0.014	0.03	0.3
CV%	80.43	34.21	47.26	7.00	10.29	38.68	34.29	33.50	15.11	3.02	53.14	3.84	24.67	12.57	40.21

Table 6 Variability in split water samples and variability among Lake Wabamun water samples (continued)

	Cl	Phenolphthalein Alkalinity	Ca	Mg
Coefficient of variation % (CV%) in sets of 3 split samples				
set July 22	0.00	6.19	2.06	1.01
set July 23	2.05	0.00	0.87	0.62
set July 24	1.30	0.00	1.90	1.40
Mean CV%	1.11	2.06	1.61	1.01
N	3	3	3	3
N>25%	0	0	0	0
Variability in Wabamun Lake				
Mean	8	10	23	18
SD	0	4	2	1
CV%	3.7	34.8	10.0	4.7

	B	Co	Cr	Fe	Hg	Ni	Sn	Sr	Th	Ti	Tl	U	V	Zn
Coefficient of variation % (CV%) in sets of 3 split samples														
set July 22	1.16	10.88	17.37	53.03	0.00	0.00	0.00	1.03	61.33	17.63	0.00	5.00	4.07	26.80
set July 23	0.59	28.28	3.04	16.37	81.51	0.00	0.00	1.85	51.44	24.17	0.00	9.62	5.63	72.47
set July 24	1.20	47.14	26.45	60.62	0.00	0.00	0.00	0.88	140.91	53.85	102.35	0.92	2.63	31.06
Mean CV%	0.98	28.77	15.62	43.34	27.17	0.00	0.00	1.25	84.56	31.88	34.12	5.18	4.11	43.45
N	3	3	3	3	3	3	3	3	3	3	3	3	3	3
N>25%	0	2	1	2	1	0	0	0	3	2	1	0	0	3
Variability in Wabamun Lake														
Mean	921	0.033	0.35	10	2.1	L0.06	L0.1	284	0.013	1.2	0.009	0.53	1.25	2.3
SD	30	0.013	0.12	6	0.5	L0.06	L0.1	25	0.010	0.4	0.004	0.03	0.13	1.1
CV%	3.24	37.94	33.90	60.06	25.47	0.00	0.00	8.66	79.14	36.40	41.59	6.41	10.59	50.09

Figure 1 Water quality sites sampled during the Wabamun Lake survey, summer 2002

Figure 2 Variables analyzed in Wabamun Lake water samples, summer 2002

Figure 3a Temperature near surface in Wabamun Lake water samples, summer 2002

Figure 3b Temperature at middle depth in Wabamun Lake water samples, summer 2002

Figure 3c Temperature at bottom depth (0.5 m above the sediment)in Wabamun Lake water samples, summer 2002

Figure 4 Concentration of sulphide in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 5 Concentration of aluminum in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 6 Concentration of arsenic in Wabaman Lake water 0.5 m above the sediment, summer 2002

Figure 7 Concentration of cadmium in Wabamun Lake water 0.5 m above the sediment, summer 2002

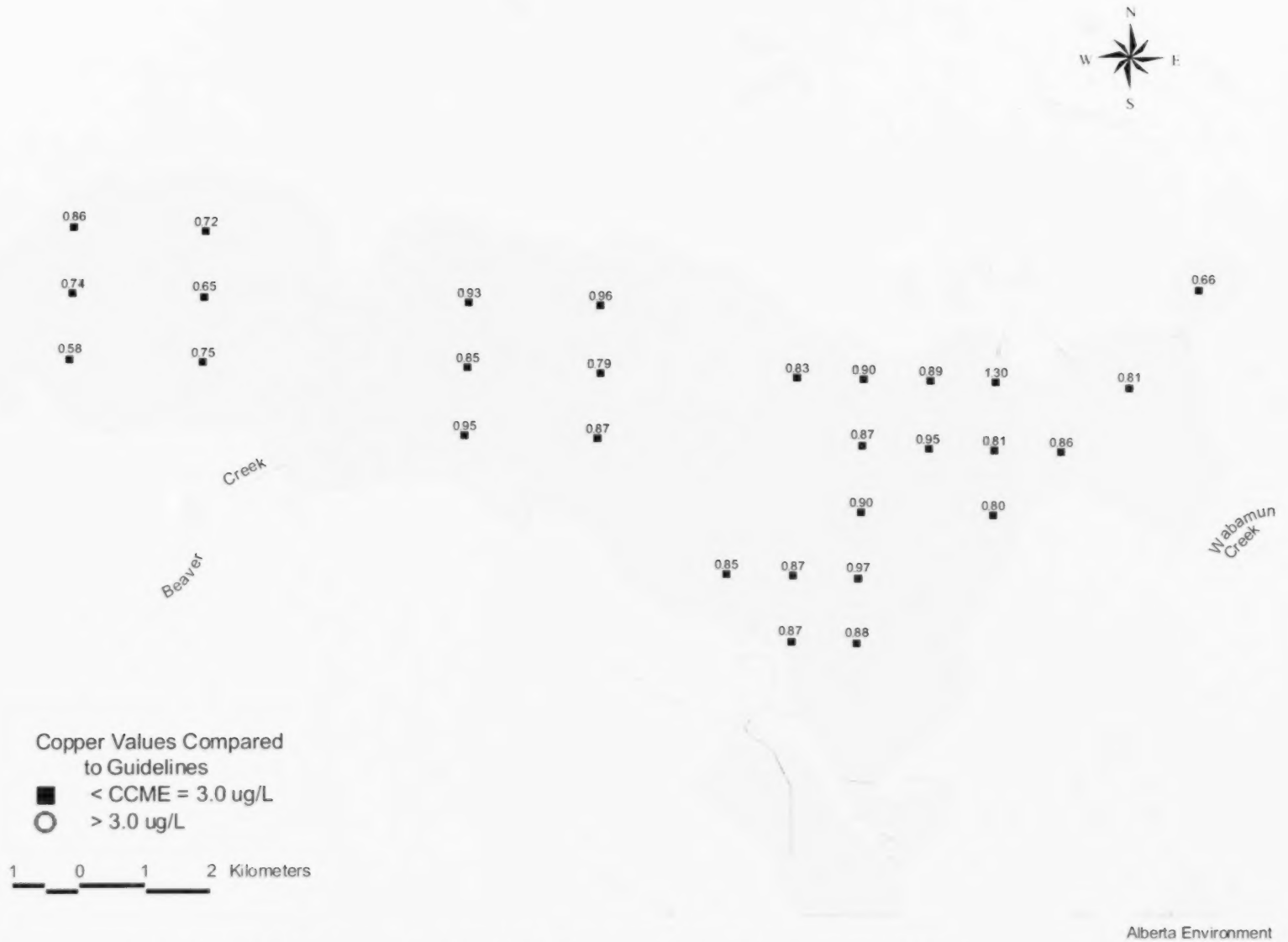

Figure 8 Concentration of copper in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 9 Concentration of lead in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 10 Concentration of selenium in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 11 Concentration of zinc in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 12 Concentration of chromium in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 13 Concentration of mercury in Wabamun Lake water 0.5 m above the sediment, summer 2002

Figure 14 Concentration of total phosphorus in Wabamun Lake euphotic water samples, summer 2002

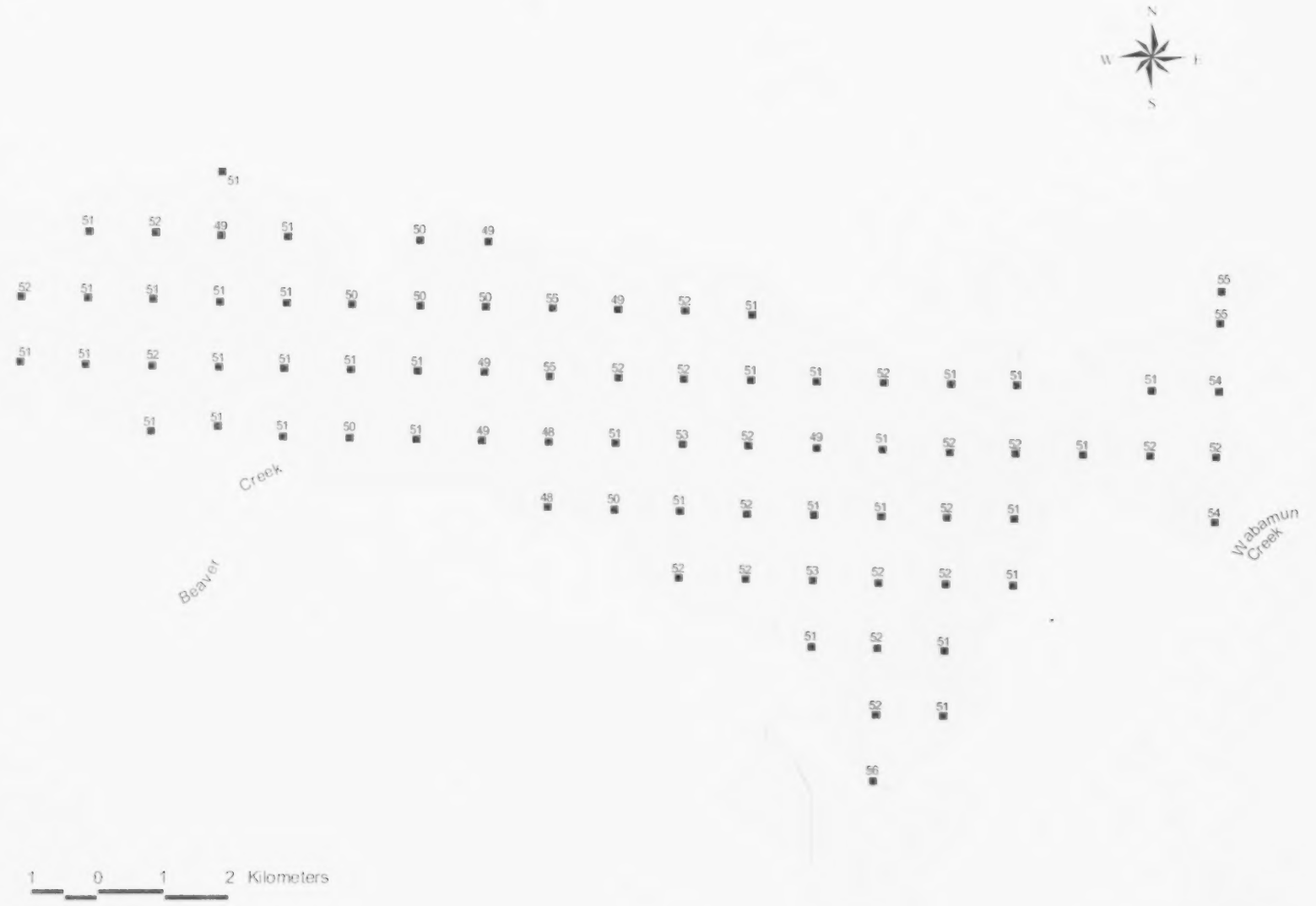

Figure 15 Concentration of dissolved sulphate in Wabamun Lake euphotic water samples, summer 2002

Figure 16 Concentration of chlorophyll-*a* in Wabamun Lake euphotic water samples, summer 2002

Figure 17a Dissolved oxygen at top depth in Wabamun Lake water samples, summer 2002

Figure 17b Dissolved oxygen at bottom depth in Wabamun Lake water samples, summer 2002

Appendix 1 Water analysis of major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake and eight other lakes, 2002

Station No.	Station Name	Station Description	Sample Date/Time	99212 Phytochlorophyll-*a* in ug/L	10602 Total Hardness, calc. CACO3 as mg/L	15421 Total Phosphorus mg/L	16306 Sulphate, diss. mg/L
a. Results of Wabamun Lake Water Analyses							
AB05DE2101	Wabamun Grid 1-1-A	1 Km East Of Seba Beach (South Node) And Seba Transect Point A	22-Jul-02 10:10	5.9		0.022	51
AB05DE2105	Wabamun Grid 1-2	1 Km East Of Seba Beach	22-Jul-02 10:35	8.2		0.02	52
AB05DE2106	Wabamun Grid 2-1	2 Km East Of Seba Beach (South Node)	22-Jul-02 09:40	8.1	125	0.019	51
AB05DE2107	Wabamun Grid 2-2	2 Km East Of Seba Beach	22-Jul-02 10:55	8	126	0.018	51
AB05DE2108	Wabamun Grid 2-3	2 Km East Of Seba Beach	22-Jul-02 11:35	8.6	127	0.024	51
AB05DE2109	Wabamun Grid 3-1	3 Km East Of Seba Beach (South Node)	22-Jul-02 12:45	8.4		0.018	51
AB05DE2110	Wabamun Grid 3-2	3 Km East Of Seba Beach	22-Jul-02 12:30	8.7		0.021	52
AB05DE2111	Wabamun Grid 3-3	3 Km East Of Seba Beach	22-Jul-02 12:15	9		0.023	51
AB05DE2112	Wabamun Grid 3-4	3 Km East Of Seba Beach	22-Jul-02 11:55	9.1		0.02	52
AB05DE2113	Wabamun Grid 4-1	4 Km East Of Seba Beach (South Node)	22-Jul-02 13:15	8.2	125	0.017	51
AB05DE2114	Wabamun Grid 4-2	4 Km East Of Seba Beach	22-Jul-02 13:30	9.1	127	0.02	51
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 13:50	8.4	128	0.021	51
AB05DE2116	Wabamun Grid 4-4	4 Km East Of Seba Beach	22-Jul-02 14:30	8.3	129	0.019	49
AB05DE2117	Wabamun Grid 4-5	4 Km East Of Seba Beach	22-Jul-02 14:45	5.5	129	0.018	51
AB05DE2118	Wabamun Grid 5-1	5 Km East Of Seba Beach (South Node)	22-Jul-02 15:30	7.3		0.022	51
AB05DE2119	Wabamun Grid 5-2	5 Km East Of Seba Beach	22-Jul-02 15:20	8.9		0.02	51
AB05DE2120	Wabamun Grid 5-3	5 Km East Of Seba Beach	22-Jul-02 15:05	7.9		0.023	51
AB05DE2121	Wabamun Grid 5-4-A	5 Km East Of Seba Beach (North Node) And Fallis West Transect Point A	22-Jul-02 14:55	8.3		0.019	51
AB05DE2125	Wabamun Grid 6-1-A	6 Km East Of Seba Beach (South Node) And Beaver Transect Point A	22-Jul-02 15:40	9	132	0.024	50
AB05DE2129	Wabamun Grid 6-2	6 Km East Of Seba Beach	22-Jul-02 15:55	8.2	133	0.02	51
AB05DE2130	Wabamun Grid 6-3	6 Km East Of Seba Beach	22-Jul-02 16:05	7.8	133	0.021	50
AB05DE2131	Wabamun Grid 7-1	0.5 Km East Of Fallis Point (South Node)	23-Jul-02 13:10	8.2		0.019	51
AB05DE2132	Wabamun Grid 7-2	0.5 Km East Of Fallis Point	23-Jul-02 13:20	7.8		0.02	51
AB05DE2133	Wabamun Grid 7-3	0.5 Km East Of Fallis Point	23-Jul-02 13:30	6.8		0.02	50
AB05DE2134	Wabamun Grid 7-4	0.5 Km East Of Fallis Point	23-Jul-02 13:35	4.9		0.017	50
AB05DE2135	Wabamun Grid 8-1	1.5 Km East Of Fallis Point (South Node)	23-Jul-02 14:30	8	132	0.023	49
AB05DE2136	Wabamun Grid 8-2	1.5 Km East Of Fallis Point	23-Jul-02 14:20	7.6	131	0.02	49
AB05DE2137	Wabamun Grid 8-3-A	1.5 Km East Of Fallis Point And Fallis East Transect Point A	23-Jul-02 14:05	6.7	132	0.019	50
AB05DE2142	Wabamun Grid 8-4	1.5 Km East Of Fallis Point	23-Jul-02 13:55	5.7	131	0.018	49
AB05DE2143	Wabamun Grid 9-1	2.5 Km East Of Fallis Point (South Node)	23-Jul-02 14:40	6.4		0.017	48
AB05DE2144	Wabamun Grid 9-2	2.5 Km East Of Fallis Point	23-Jul-02 14:50	8.1		0.02	48
AB05DE2145	Wabamun Grid 9-3	2.5 Km East Of Fallis Point	23-Jul-02 15:00	7.7		0.018	55
AB05DE2146	Wabamun Grid 9-4	2.5 Km East Of Fallis Point	23-Jul-02 15:10	7.1		0.02	55

Appendix 1 Water analysis of major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake and eight other lakes, 2002 (cont'd)

Station No.	Station Name	Station Description	Sample Date/Time	99212 Phytochlorophyll-*a* in ug/L	10602 Total Hardness, calc. CACO3 as mg/L	15421 Total Phosphorus mg/L	16306 Sulphate, diss. mg/L
AB05DE2147	Wabamun Grid 10-1	3.5 Km East Of Fallis Point (South Node)	23-Jul-02 16:00	8.4	135	0.021	50
AB05DE2148	Wabamun Grid 10-2	3.5 Km East Of Fallis Point	23-Jul-02 15:45	7.7	133	0.02	51
AB05DE2149	Wabamun Grid 10-3	3.5 Km East Of Fallis Point	23-Jul-02 15:30	6.5	134	0.022	52
AB05DE2150	Wabamun Grid 10-4	3.5 Km East Of Fallis Point	23-Jul-02 15:20	6.4	133	0.021	49
AB05DE2151	Wabamun Grid 11-1	4.5 Km East Of Fallis Point (South Node)	23-Jul-02 13:45	8.6		0.025	52
AB05DE2152	Wabamun Grid 11-2	4.5 Km East Of Fallis Point	23-Jul-02 12:55	8.4		0.02	51
AB05DE2153	Wabamun Grid 11-3	4.5 Km East Of Fallis Point	24-Jul-02 09:55	6.3		0.021	53
AB05DE2154	Wabamun Grid 11-4	4.5 Km East Of Fallis Point	24-Jul-02 10:05	6.7		0.02	52
AB05DE2155	Wabamun Grid 11-5	4.5 Km East Of Fallis Point	24-Jul-02 10:15	7.3		0.023	52
AB05DE2156	Wabamun Grid 12-1	North Of Sundance Plant (South Node)	23-Jul-02 12:20	8.8	131	0.025	52
AB05DE2157	Wabamun Grid 12-2	North Of Sundance Plant	23-Jul-02 12:30	7.2	133	0.022	52
AB05DE2158	Wabamun Grid 12-3	North Of Sundance Plant	24-Jul-02 09:40	7.1	140	0.021	52
AB05DE2159	Wabamun Grid 12-4	North Of Sundance Plant	24-Jul-02 10:35	6.6	142	0.02	51
AB05DE2160	Wabamun Grid 12-5	North Of Sundance Plant	24-Jul-02 10:25	6.4	140	0.022	51
AB05DE2161	Wabamun Grid 13-1	1 Km East Of Sundance Plant (South Node)	23-Jul-02 11:30	8.7	129	0.02	51
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 11:00	7.7	134	0.022	53
AB05DE2163	Wabamun Grid 13-3	1 Km East Of Sundance Plant	23-Jul-02 10:40	7.8		0.022	51
AB05DE2164	Wabamun Grid 13-4	1 Km East Of Sundance Plant	24-Jul-02 11:15	6.1		0.02	49
AB05DE2165	Wabamun Grid 13-5	1 Km East Of Sundance Plant	24-Jul-02 11:00	8.1	139	0.025	51
AB05DE2166	Wabamun Grid 14-1	2 Km East Of Sundance Plant (South Node)	23-Jul-02 09:30	3.9	108	0.022	56
AB05DE2168	Wabamun Grid 14-2	2 Km East Of Sundance Plant	23-Jul-02 09:50	5.7	131	0.02	52
AB05DE2170	Wabamun Grid 14-3	2 Km East Of Sundance Plant	23-Jul-02 10:00	6.8	134	0.019	52
AB05DE2172	Wabamun Grid 14-4	2 Km East Of Sundance Plant	23-Jul-02 10:15	7.3	133	0.02	52
AB05DE2173	Wabamun Grid 14-5	2 Km East Of Sundance Plant	23-Jul-02 10:25	6.2	134	0.018	51
AB05DE2174	Wabamun Grid 14-6	2 Km East Of Sundance Plant	24-Jul-02 11:20	6.4	140	0.02	51
AB05DE2175	Wabamun Grid 14-7	2 Km East Of Sundance Plant	24-Jul-02 11:35	7.5	142	0.021	52
AB05DE2176	Wabamun Grid 15-1	3 Km East Of Sundance Plant (South Node)	23-Jul-02 09:15	5		0.023	51
AB05DE2177	Wabamun Grid 15-2	3 Km East Of Sundance Plant	23-Jul-02 08:40	5.1		0.021	51
AB05DE2178	Wabamun Grid 15-3	3 Km East Of Sundance Plant	24-Jul-02 09:00	5.3		0.02	52
AB05DE2179	Wabamun Grid 15-4	3 Km East Of Sundance Plant	24-Jul-02 08:45	5.1		0.018	52
AB05DE2180	Wabamun Grid 15-5	3 Km East Of Sundance Plant	24-Jul-02 11:55	6.2	138	0.02	52
AB05DE2181	Wabamun Grid 15-6-A	3 Km East Of Sundance Plant (North Node) And Alison Bay West Transect Point A	24-Jul-02 11:45	9	140	0.026	51
AB05DE2185	Wabamun Grid 16-1	4 Km East Of Sundance Plant (South Node)	24-Jul-02 09:10	6.9	140	0.025	51
AB05DE2186	Wabamun Grid 16-2	4 Km East Of Sundance Plant	24-Jul-02 09:20	5.3	140	0.021	51

Appendix 1 Water analysis of major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake and eight other lakes, 2002 (cont'd)

Station No.	Station Name	Station Description	Sample Date/Time	99212 Phytochlorophyll-*a* in ug/L	10602 Total Hardness, calc. CACO3 as mg/L	15421 Total Phosphorus mg/L	16306 Sulphate, diss. mg/L
AB05DE2187	Wabamun Grid 16-3	4 Km East Of Sundance Plant	24-Jul-02 12:05	5.9	137	0.022	52
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:20	7.4	137	0.023	51
AB05DE2192	Wabamun Grid 17-1	Off Point Alison	24-Jul-02 12:45	5	132	0.019	51
AB05DE2193	Wabamun Grid 18-1-A	1 Km East Of Point Alison (South Node) And Outlet Transect Point A	24-Jul-02 13:20	4.6	134	0.021	52
AB05DE2198	Wabamun Grid 18-2	1 Km East Of Point Alison	24-Jul-02 13:05	4.4	133	0.02	51
AB05DE2200	Wabamun Grid 19-1	2 Km East Of Point Alison (South Node)	24-Jul-02 13:35	4.2		0.016	54
AB05DE2201	Wabamun Grid 19-2	2 Km East Of Point Alison	24-Jul-02 13:50	4.3		0.019	52
AB05DE2202	Wabamun Grid 19-3	2 Km East Of Point Alison	24-Jul-02 14:05	3.1		0.018	54
AB05DE2203	Wabamun Grid 20-1	Moonlight Bay (Park)	24-Jul-02 14:35	3.1	108	0.021	55
AB05DE2204	Wabamun Grid 20-2	Moonlight Bay	24-Jul-02 14:25	2.5		0.023	55
b. Results of Analyses of Eight Lakes Sampled in 2002							
AB05CC0620	Gull Lake	Center Profile Site 2	21-Aug-02 15:00	12.7	322	0.036	89
AB05CC0650	Sylvan Lake	Profile at Greatest Depth	22-Aug-02 12:00	2.1	212	0.012	15
AB05DF0340	Wizard Lake	Profile at Center	28-Aug-02 12:00	73.6	96	0.061	5
AB05EA0470	Isle Lake	Profile at Center	29-Aug-02 10:30	26.2	111	0.114	11
AB05EA0590	Lac Ste. Anne	East Side Profile at Greatest Depth	05-Sep-02 11:30	32.6	117	0.042	10
AB05ED0210	Bonnie Lake	West Profile at Center	03-Sep-02 13:00	98.2	348	0.193	95
AB05FA0490	Pigeon Lake	Profile at Center	04-Sep-02 11:00	15.6	112	0.027	7
AB06AA0110	Amisk Lake	South Basin Profile	27-Aug-02 11:30	10.9	146	0.023	21

Appendix 1 Water analysis of major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake and eight other lakes, 2002 (cont'd)

Station Name	2041 Specific Conductance, Lab uS/cm	6201 Bicarbonate, calc. mg/L	6301 Carbonate, calc. mg/L	7105 Nitrite+Nitrate Nitrogen, diss. mg/L	7205 Nitrite, diss. mg/L	9107 Fluoride, diss. mg/L	102616 Silica, Reactive mg/L	10301 pH, Lab units	100536,207 Total Dissolved Solids, calc. mg/L	10101 Total Alkalinity CaCO3 as mg/L	102085 Sodium, diss. Filt. mg/L	102086 Potassium, diss. Filt. mg/L	102087 Chloride, diss. mg/L	10151 Phenolphthalein Alkalinity CaCO3 as mg/L	101838 Calcium, extract. mg/L	101847 Magnesium, extract. mg/L
Wabamun Grid 1-1-A																
Wabamun Grid 1-2																
Wabamun Grid 2-1	524	248	10	0.015	0.002	0.39	2.6	8.59	306	221	65.4	9.7	7.6	9	22.3	17
Wabamun Grid 2-2	523	250	10	0.007	0.002	0.38	2.6	8.59	303	221	63.2	9.4	7.4	8	22.3	17.2
Wabamun Grid 2-3	526	248	10	L0.005	0.002	0.38	2.5	8.63	304	221	63.3	9.4	7.4	9	22.8	17.1
Wabamun Grid 3-1																
Wabamun Grid 3-2																
Wabamun Grid 3-3																
Wabamun Grid 3-4																
Wabamun Grid 4-1	525	245	12	0.005	0.002	0.38	2.5	8.66	304	221	64.1	9.5	7.5	10	21.8	17.1
Wabamun Grid 4-2	526	247	11	L0.005	0.002	0.38	2.6	8.66	299	221	59	9.4	7.5	9	22.3	17.3
Wabamun Grid 4-3	525	245	12	0.005	0.002	0.38	2.6	8.63	305	221	64.9	9.7	7.5	10	22.7	17.3
Wabamun Grid 4-4	525	248	11	L0.005	0.002	0.38	2.6	8.63	304	221	64.4	9.4	7.4	9	22.8	17.5
Wabamun Grid 4-5	523	246	11	L0.005	0.002	0.38	2.5	8.66	305	221	64.1	9.5	7.6	9	22.6	17.7
Wabamun Grid 5-1																
Wabamun Grid 5-2																
Wabamun Grid 5-3																
Wabamun Grid 5-4-A																
Wabamun Grid 6-1-A	524	248	11	L0.005	0.001	0.38	2.6	8.65	305	221	64.2	9.5	7.5	9	22.7	18.3
Wabamun Grid 6-2	525	247	11	L0.005	0.001	0.38	2.6	8.65	306	221	64.6	9.4	7.5	9	23.4	18.1
Wabamun Grid 6-3	525	247	11	0.005	0.002	0.37	2.6	8.66	304	220	63.8	9.4	7.4	9	23	18.4
Wabamun Grid 7-1																
Wabamun Grid 7-2																
Wabamun Grid 7-3																
Wabamun Grid 7-4																
Wabamun Grid 8-1	524	248	10	0.006	0.002	0.39	2.6	8.62	303	221	63	9.5	7.5	9	23.9	17.5
Wabamun Grid 8-2	524	247	11	0.009	0.003	0.38	2.6	8.65	304	220	64.1	9.5	7.5	9	23.4	17.7
Wabamun Grid 8-3-A	523	243	12	0.01	0.003	0.38	2.5	8.69	303	220	63	9.4	7.5	10	23.6	17.7
Wabamun Grid 8-4	523	243	13	0.013	0.003	0.38	2.5	8.69	304	220	64.2	9.3	7.5	11	23.4	17.5
Wabamun Grid 9-1																
Wabamun Grid 9-2																
Wabamun Grid 9-3																
Wabamun Grid 9-4																

Appendix 1 Water analysis of major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake and eight other lakes, 2002 (cont'd)

Station Name	2041 Specific Conductance, Lab uS/cm	6201 Bicarbonate, calc. mg/L	6301 Carbonate, calc. mg/L	7105 Nitrite+Nitrate Nitrogen, diss. mg/L	7205 Nitrite, diss. mg/L	9107 Fluoride, diss. mg/L	102616 Silica, Reactive mg/L	10301 pH, Lab units	100536.207 Total Dissolved Solids, calc. mg/L	10101 Total Alkalinity CaCO3 as mg/L	102085 Sodium, diss. Filt. mg/L	102086 Potassium, diss. Filt. mg/L	102087 Chloride, diss. mg/L	10151 Phenolphthalein Alkalinity CaCO3 as mg/L	101838 Calcium, extract. mg/L	101847 Magnesium, extract. mg/L
Wabamun Grid 10-1	522	247	11	L0.005	0.001	0.37	2.6	8.63	303	220	62.1	9.2	7.4	9	24	18.2
Wabamun Grid 10-2	521	244	12	0.005	0.001	0.38	2.6	8.68	306	220	64.5	9.4	7.5	10	23.5	17.9
Wabamun Grid 10-3	522	242	13	L0.005	0.001	0.38	2.5	8.7	306	220	62.5	9.7	7.5	10	24	18
Wabamun Grid 10-4	522	243	12	0.006	0.001	0.38	2.5	8.71	303	220	63.4	9.5	7.5	10	23.6	17.9
Wabamun Grid 11-1																
Wabamun Grid 11-2																
Wabamun Grid 11-3																
Wabamun Grid 11-4																
Wabamun Grid 11-5																
Wabamun Grid 12-1	521	245	11	L0.005	0.001	0.38	2.6	8.64	305	220	63.6	9.6	7.5	9	23.4	17.6
Wabamun Grid 12-2	519	244	11	L0.005	0.001	0.38	2.5	8.65	305	219	63.1	9.5	7.5	9	23.5	18
Wabamun Grid 12-3	524	247	11	L0.005	0.002	0.38	2.8	8.66	307	221	63.1	9.4	7.5	9	24.3	19.3
Wabamun Grid 12-4	525	246	11	L0.005	0.002	0.38	2.8	8.68	308	220	64.3	9.5	7.6	9	24.2	19.8
Wabamun Grid 12-5	523	244	12	L0.005	0.002	0.37	2.7	8.68	306	220	63	9.5	7.4	10	24	19.4
Wabamun Grid 13-1	520	242	13	0.005	0.004	0.38	2.6	8.65	303	219	63.4	9.2	7.4	10	22.7	17.5
Wabamun Grid 13-2-A	523	245	11	L0.005	0.001	0.39	2.7	8.64	308	220	64.5	9.5	7.6	9	23.1	18.5
Wabamun Grid 13-3																
Wabamun Grid 13-4																
Wabamun Grid 13-5	524	246	10	L0.005	0.002	0.38	3	8.63	307	219	64.1	9.5	7.6	9	23.7	19.4
Wabamun Grid 14-1	490	184	25	L0.005	0.002	0.38	2.6	9.11	281	193	60.4	9.5	7.7	21	13.1	18.3
Wabamun Grid 14-2	518	258	2	L0.005	0.002	0.39	2.4	8.74	303	216	64.3	9.4	7.6	2	21.7	18.6
Wabamun Grid 14-3	523	243	12	L0.005	0.002	0.38	2.6	8.65	308	219	65.7	9.6	7.7	10	22.9	18.7
Wabamun Grid 14-4	522	244	12	L0.005	0.002	0.38	2.6	8.66	307	220	65	9.4	7.6	10	22.6	18.6
Wabamun Grid 14-5	523	243	12	0.005	0.002	0.38	2.5	8.66	305	219	63.9	9.5	7.5	10	22.6	18.8
Wabamun Grid 14-6	523	243	12	0.005	0.002	0.37	2.7	8.69	306	219	64	9.3	7.5	10	23.9	19.5
Wabamun Grid 14-7	522	245	11	0.007	0.003	0.38	2.8	8.67	308	219	64	9.4	7.5	9	24.2	19.7
Wabamun Grid 15-1																
Wabamun Grid 15-2																
Wabamun Grid 15-3																
Wabamun Grid 15-4																
Wabamun Grid 15-5	520	240	13	0.005	0.002	0.37	2.5	8.73	304	218	62.4	9.3	7.4	11	23.3	19.3
Wabamun Grid 15-6-A	521	245	11	0.006	0.001	0.37	2.8	8.65	308	219	64.3	9.5	7.5	9	23.9	19.6
Wabamun Grid 16-1	518	240	11	0.007	0.004	0.38	2.1	8.69	303	216	62.5	9.6	7.5	10	23.2	20.1
Wabamun Grid 16-2	518	238	13	L0.005	0.002	0.38	2.5	8.73	306	217	63.8	9.5	7.5	11	23.7	19.7

Appendix 1 Water analysis of major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake and eight other lakes, 2002 (cont'd)

Station Name	2041 Specific Conductance, Lab uS/cm	6201 Bicarbonate, calc. mg/L	6301 Carbonate, calc. mg/L	7105 Nitrite+Nitrate Nitrogen, diss. mg/L	7205 Nitrite, diss. mg/L	9107 Fluoride, diss. mg/L	102616 Silica, Reactive mg/L	10301 pH, Lab units	100536,207 Total Dissolved Solids, calc. mg/L	10101 Total Alkalinity CaCO3 as mg/L	102085 Sodium, diss. Filt. mg/L	102086 Potassium, diss. Filt. mg/L	102087 Chloride, diss. mg/L	10151 Phenolphthalein Alkalinity CaCO3 as mg/L	101838 Calcium, extract. mg/L	101847 Magnesium, extract. mg/L
Wabamun Grid 16-3	520	241	13	0.005	0.002	0.37	2.7	8.72	308	219	65.2	9.6	7.8	11	23.6	18.9
Wabamun Grid 16-4-A	520	242	12	0.006	0.002	0.37	2.7	8.7	303	219	60.6	9.5	7.6	10	23.2	19.1
Wabamun Grid 17-1	520	237	14	L0.005	0.002	0.37	2.7	8.78	303	217	64	9.5	7.6	11	22.2	18.6
Wabamun Grid 18-1-A	517	234	14	L0.005	0.002	0.38	2.7	8.79	304	215	64.6	9.6	7.7	12	22	19.1
Wabamun Grid 18-2	518	234	14	L0.005	0.002	0.37	2.6	8.77	302	215	63.3	9.2	7.7	12	21.9	19
Wabamun Grid 19-1																
Wabamun Grid 19-2																
Wabamun Grid 19-3																
Wabamun Grid 20-1	493	171	33	0.006	0.002	0.39	4.2	9.29	286	196	63.6	9.8	9.3	28	12.7	18.7
Wabamun Grid 20-2																
Gull Lake						0.19			915		217	20.9	5.2		10.4	72
Sylvan Lake						0.13			390		69.2	7.3	2.4		17.9	40.6
Wizard Lake						0.16			207		33.6	5.6	4.1		21.9	10.1
Isle Lake						0.13			231		26.4	8	6.2		27.9	10
Lac Ste. Anne						0.14			190		20.8	8.8	5		26.1	12.7
Bonnie Lake									580		39.4	19.8	6.7		38.8	60.9
Pigeon Lake						0.12			194		18.5	5.9	2.1		23.3	13
Amisk Lake						0.12			240		25.5	4.1	2.9		27.9	18.4

Appendix 2 Water analysis of sulphide and total metals data in Wabamun Lake and eight other lakes, 2002

Station No.	Station Name	Depth m	Station Description	Sample Date/Time	101484 Sulphide, diss. mg/L	101887 Silver ug/L	101888 Aluminum ug/L	101939 101889 Arsenic ug/L
a. Results of Wabamun Lake Water Analyses								
AB05DE2106	Wabamun Grid 2-1	9	2 Km East Of Seba Beach (South Node)	22-Jul-02 09:45	0.006	0.0052	43	3.1
AB05DE2107	Wabamun Grid 2-2	9.4	2 Km East Of Seba Beach	22-Jul-02 10:15	0.004	0.016	67.3	3.3
AB05DE2108	Wabamun Grid 2-3	7.5	2 Km East Of Seba Beach	22-Jul-02 10:35	0.005	L0.005	43	2.7
AB05DE2114	Wabamun Grid 4-2	9.1	4 Km East Of Seba Beach	22-Jul-02 11:50	0.001	0.008	28.5	2.9
AB05DE2115	Wabamun Grid 4-3	9.2	4 Km East Of Seba Beach	22-Jul-02 11:15	0.005	L0.005	20	2.9
AB05DE2116	Wabamun Grid 4-4	8.8	4 Km East Of Seba Beach	22-Jul-02 10:55	0.002	0.01	39.4	2.9
AB05DE2135	Wabamun Grid 8-1	8.5	1.5 Km East Of Fallis Point (South Node)	22-Jul-02 12:20	L0.001	L0.005	41.5	3.7
AB05DE2136	Wabamun Grid 8-2	8.1	1.5 Km East Of Fallis Point	22-Jul-02 12:40	L0.001	0.01	33	3.2
AB05DE2137	Wabamun Grid 8-3-A	6.2	1.5 Km East Of Fallis Point And Fallis East Transect Point A	22-Jul-02 12:55	0.001	L0.005	68	3.2
AB05DE2148	Wabamun Grid 10-2	7.5	3.5 Km East Of Fallis Point	23-Jul-02 15:55	0.001	L0.005	21	3.4
AB05DE2149	Wabamun Grid 10-3	6.9	3.5 Km East Of Fallis Point	23-Jul-02 15:40	0.001	L0.005	27.7	3.3
AB05DE2150	Wabamun Grid 10-4	6.3	3.5 Km East Of Fallis Point	23-Jul-02 15:25	0.002	L0.005	19.9	3.2
AB05DE2156	Wabamun Grid 12-1	5.8	North Of Sundance Plant (South Node)	23-Jul-02 11:15	0.001	L0.005	39.1	3
AB05DE2161	Wabamun Grid 13-1	1.5	1 Km East Of Sundance Plant (South Node)	23-Jul-02 09:50	L0.001	L0.005	19.4	2.9
AB05DE2162	Wabamun Grid 13-2-A	5.7	1 Km East Of Sundance Plant	23-Jul-02 10:15	0.001	L0.005	23	3.3
AB05DE2165	Wabamun Grid 13-5	5	1 Km East Of Sundance Plant	24-Jul-02 10:50	0.001	L0.005	33	3.5
AB05DE2170	Wabamun Grid 14-3	4.1	2 Km East Of Sundance Plant	23-Jul-02 09:35	L0.001	L0.005	22	3.1
AB05DE2172	Wabamun Grid 14-4	4.7	2 Km East Of Sundance Plant	23-Jul-02 09:15	L0.001	0.0076	22.6	3.1
AB05DE2173	Wabamun Grid 14-5	5	2 Km East Of Sundance Plant	23-Jul-02 08:50	L0.001	L0.005	29.9	3.2
AB05DE2174	Wabamun Grid 14-6	6.3	2 Km East Of Sundance Plant	24-Jul-02 11:20	0.001	L0.005	21.4	3.2
AB05DE2175	Wabamun Grid 14-7	4.9	2 Km East Of Sundance Plant	24-Jul-02 11:35	L0.001	L0.005	40.4	3.1
AB05DE2180	Wabamun Grid 15-5	5.3	3 Km East Of Sundance Plant	24-Jul-02 12:00	L0.001	0.008	24.3	3.3
AB05DE2181	Wabamun Grid 15-6-A	4	3 Km East Of Sundance Plant (North Node) And Alison Bay West Transect Point A	24-Jul-02 11:50	L0.001	L0.005	25.8	3.5
AB05DE2186	Wabamun Grid 16-2	2.8	4 Km East Of Sundance Plant	24-Jul-02 09:25	0.001	L0.005	18.5	3.2
AB05DE2187	Wabamun Grid 16-3	4.4	4 Km East Of Sundance Plant	24-Jul-02 12:15	L0.001	L0.005	20.4	3.1
AB05DE2188	Wabamun Grid 16-4-A	3.3	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:30	L0.001	L0.005	25.2	3.1
AB05DE2192	Wabamun Grid 17-1	4	Off Point Alison	24-Jul-02 13:45	L0.001	L0.005	19.5	3.3
AB05DE2198	Wabamun Grid 18-2	2.4	1 Km East Of Point Alison	24-Jul-02 14:10	L0.001	L0.005	12.3	3.6
AB05DE2203	Wabamun Grid 20-1	1.3	Moonlight Bay (Park)	24-Jul-02 14:45	0.002	0.012	7.7	3.1

Appendix 2 Water analysis of sulphide and total metals data in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Depth m	Station Description	Sample Date/Time	101484 Sulphide, diss. mg/L	101887 Silver ug/L	101888 Aluminum ug/L	101939 101889 Arsenic ug/L
b. Results of Analyses of Eight Lakes Sampled in 2002								
AB05CC0620	Gull Lake	1	Center Profile Site 2	21-Aug-02 11:30				
AB05CC0620	Gull Lake	3	Center Profile Site 2	21-Aug-02 11:31				
AB05CC0620	Gull Lake	6	Center Profile Site 2	21-Aug-02 11:32	L0.001	L0.005	69	8.6
AB05CC0650	Sylvan Lake	1	Profile at Greatest Depth	22-Aug-02 12:00				
AB05CC0650	Sylvan Lake	7	Profile at Greatest Depth	22-Aug-02 12:01				
AB05CC0650	Sylvan Lake	14	Profile at Greatest Depth	22-Aug-02 12:02	L0.001	L0.005	34.4	2.6
AB05DF0340	Wizard Lake	1	Profile at Center	28-Aug-02 12:15				
AB05DF0340	Wizard Lake	6	Profile at Center	28-Aug-02 12:16				
AB05DF0340	Wizard Lake	10.5	Profile at Center	28-Aug-02 12:17	0.007	L0.005	11.7	1.39
AB05EA0470	Isle Lake	1	Profile at Center	29-Aug-02 10:30				
AB05EA0470	Isle Lake	3	Profile at Center	29-Aug-02 10:31				
AB05EA0470	Isle Lake	5.5	Profile at Center	29-Aug-02 10:32	0.002	L0.005	17.8	1.58
AB05EA0590	Lac Ste. Anne	1	East Side Profile at Greatest Depth	05-Sep-02 11:00				
AB05EA0590	Lac Ste. Anne	5	East Side Profile at Greatest Depth	05-Sep-02 10:11				
AB05EA0590	Lac Ste. Anne	9	East Side Profile at Greatest Depth	05-Sep-02 10:18	0.001	L0.005	4.8	1.3
AB05ED0210	Bonnie Lake	1	West Profile at Center	03-Sep-02 13:05				
AB05ED0210	Bonnie Lake	2	West Profile at Center	03-Sep-02 13:06				
AB05ED0210	Bonnie Lake	3.5	West Profile at Center	03-Sep-02 13:07	0.005	L0.005	24.9	4.43
AB05FA0490	Pigeon Lake	1	Profile at Center	04-Sep-02 11:00				
AB05FA0490	Pigeon Lake	5	Profile at Center	04-Sep-02 11:01				
AB05FA0490	Pigeon Lake	9	Profile at Center	04-Sep-02 11:02	L0.001	L0.005	6.82	1.93
AB06AA0110	Amisk Lake	1	South Basin Profile	27-Aug-02 11:30				
AB06AA0110	Amisk Lake	26	South Basin Profile	27-Aug-02 11:31				
AB06AA0110	Amisk Lake	53	South Basin Profile	27-Aug-02 11:32	0.754	L0.005	7.6	1.02

Appendix 2 Water analysis of sulphide and total metals data in Wabamun Lake and eight other lakes, 2002 (continued)

Station Name	101891 Barium ug/L	101892 Beryllium ug/L	101893 Bismuth ug/L	101895 Cadmium ug/L	101899 Copper ug/L	101902 Lithium ug/L	101904 Manganese ug/L	101905 Molybdenum ug/L	101912 Lead ug/L	101914 Antimony ug/L	101915 101930 Selenium ug/L	101917 Tin ug/L	101919 Thorium ug/L
Wabamun Grid 2-1	127	L0.04	0.011	L0.02	0.58	33.8	130	4.7	0.076	0.22	L0.4	L0.1	0.012
Wabamun Grid 2-2	142	L0.04	0.011	0.03	0.74	35.2	161	4.4	0.067	0.18	1.3	L0.1	0.021
Wabamun Grid 2-3	123	L0.04	0.012	L0.02	0.86	34.4	91	5.1	0.05	0.19	L0.4	L0.1	0.013
Wabamun Grid 4-2	121	L0.04	0.011	0.03	0.75	34.2	53.4	5.09	0.054	0.22	0.6	L0.1	L0.003
Wabamun Grid 4-3	127	L0.04	0.019	0.021	0.65	34.4	141	5.04	0.052	0.19	L0.4	L0.1	0.026
Wabamun Grid 4-4	124	L0.04	0.008	0.06	0.72	32.6	66.1	5.24	0.047	0.19	0.52	L0.1	0.006
Wabamun Grid 8-1	122	0.12	0.012	0.05	0.95	34.3	80	5	0.073	0.25	1.3	L0.1	0.017
Wabamun Grid 8-2	120	L0.04	0.009	0.04	0.85	33.8	54.2	5	0.068	0.17	0.5	L0.1	0.013
Wabamun Grid 8-3-A	125	L0.04	0.006	0.03	0.93	34.3	82	5.25	0.071	0.21	0.71	L0.1	0.006
Wabamun Grid 10-2	119	0.05	L0.005	L0.02	0.87	34	72.9	5.14	0.054	0.25	1	L0.1	0.028
Wabamun Grid 10-3	120	L0.04	L0.005	L0.02	0.79	37.2	78.1	4.76	0.074	0.25	L0.4	L0.1	L0.003
Wabamun Grid 10-4	117	L0.04	L0.005	L0.02	0.96	34.3	62	4.99	0.042	0.23	L0.4	L0.1	0.0046
Wabamun Grid 12-1	118	L0.04	L0.005	L0.02	0.85	36.7	53.8	5	0.053	0.23	0.85	L0.1	0.0039
Wabamun Grid 13-1	120	L0.04	L0.005	L0.02	0.87	37.1	47.2	5.2	0.047	0.2	L0.4	L0.1	0.019
Wabamun Grid 13-2-A	123	0.12	L0.005	L0.02	0.87	36.3	103	4.8	0.072	0.24	0.8	L0.1	0.011
Wabamun Grid 13-5	125	L0.04	0.009	L0.02	0.83	35.4	142	4.98	0.079	0.22	L0.4	L0.1	0.004
Wabamun Grid 14-3	116	L0.04	L0.005	L0.02	0.88	35.5	44.6	4.91	0.065	0.18	0.7	L0.1	0.05
Wabamun Grid 14-4	118	L0.04	0.006	0.04	0.97	34	43.4	5.2	0.087	0.28	0.9	L0.1	L0.003
Wabamun Grid 14-5	120	L0.04	0.008	0.05	0.9	34.8	54.9	5.3	0.081	0.24	L0.4	L0.1	0.004
Wabamun Grid 14-6	117	L0.04	L0.005	L0.02	0.87	34.4	62	5	0.058	0.25	0.42	L0.1	0.01
Wabamun Grid 14-7	119	L0.04	L0.005	L0.02	0.9	34.3	72.4	4.8	0.057	0.25	0.5	L0.1	0.005
Wabamun Grid 15-5	115	L0.04	L0.005	L0.02	0.95	35.3	35.5	5.1	0.041	0.22	1.3	L0.1	0.0035
Wabamun Grid 15-6-A	115	L0.04	L0.005	L0.02	0.89	35.2	54.9	5.1	0.043	0.2	L0.5	L0.1	0.012
Wabamun Grid 16-2	111	L0.04	L0.005	L0.02	0.8	33.9	32.4	4.9	0.047	0.18	1.3	L0.1	0.012
Wabamun Grid 16-3	114	L0.04	L0.005	0.03	0.81	35.7	35.1	5	0.045	0.22	0.44	L0.1	0.004
Wabamun Grid 16-4-A	114	L0.04	L0.005	0.03	1.3	34.9	43.1	5	0.052	0.24	L0.4	L0.1	0.006
Wabamun Grid 17-1	116	0.06	L0.005	0.03	0.86	34	39.8	5.2	0.038	0.25	L0.5	L0.1	0.012
Wabamun Grid 18-2	108	0.14	L0.005	0.02	0.81	35.4	41.2	5.1	0.041	0.21	L0.5	L0.1	0.015
Wabamun Grid 20-1	63.7	0.08	L0.005	L0.02	0.66	35	9.51	5.2	0.041	0.23	L0.5	L0.1	0.021

Appendix 2 Water analysis of sulphide and total metals data in Wabamun Lake and eight other lakes, 2002 (continued)

Station Name	101891 Barium ug/L	101892 Beryllium ug/L	101893 Bismuth ug/L	101895 Cadmium ug/L	101899 Copper ug/L	101902 Lithium ug/L	101904 Manganese ug/L	101905 Molybdenum ug/L	101912 Lead ug/L	101914 Antimony ug/L	101915 101930 Selenium ug/L	101917 Tin ug/L	101919 Thorium ug/L
Gull Lake													
Gull Lake													
Gull Lake	37.3	L0.04	L0.005	0.03	1.03	42.1	2.03	5.21	0.117	0.33	L0.4	L0.1	L0.003
Sylvan Lake													
Sylvan Lake													
Sylvan Lake	70.4	L0.04	L0.005	L0.02	0.39	19.3	4.35	2.84	0.063	0.12	L0.4	L0.1	0.08
Wizard Lake													
Wizard Lake													
Wizard Lake	78.4	L0.04	L0.005	L0.02	0.2	10.7	716	0.47	0.029	0.09	L0.4	L0.1	0.013
Isle Lake													
Isle Lake													
Isle Lake	78.7	L0.04	L0.005	0.03	0.24	13.6	311	0.51	0.019	0.04	L0.4	L0.1	0.01
Lac Ste. Anne													
Lac Ste. Anne													
Lac Ste. Anne	67.2	L0.04	L0.005	0.025	0.2	12.7	56.1	0.46	0.019	0.08	L0.4	0.6	L0.003
Bonnie Lake													
Bonnie Lake													
Bonnie Lake	97.6	L0.04	L0.005	L0.02	0.35	43.3	65.9	1.38	0.15	0.08	L0.4	L0.1	0.005
Pigeon Lake													
Pigeon Lake													
Pigeon Lake	79	L0.04	L0.005	0.03	0.18	7.7	65.6	0.57	L0.01	0.08	0.62	L0.1	L0.003
Amisk Lake													
Amisk Lake													
Amisk Lake	77.3	L0.04	L0.005	L0.02	0.21	16.2	547	0.15	L0.01	0.02	L0.4	L0.1	0.038

Appendix 2 Water analysis of sulphide and total metals data in Wabamun Lake and eight other lakes, 2002 (continued)

Station Name	101920 Titanium ug/L	101921 Thallium ug/L	101922 Uranium ug/L	101923 Vanadium ug/L	101924 Zinc ug/L	101925 Boron ug/L	101926 Chromium ug/L	101931 Strontium ug/L	101936 Iron ug/L	101937 Cobalt ug/L	101938 Nickel ug/L	101979 Mercury ng/L
Wabamun Grid 2-1	2	L0.003	0.53	0.96	0.75	886	0.28	281	16	0.07	L0.06	L0.6
Wabamun Grid 2-2	1.3	L0.003	0.49	0.87	2.1	900	0.28	287	9	L0.02	L0.06	L0.6
Wabamun Grid 2-3	1.6	L0.003	0.489	1.12	1.3	908	0.3	290	12	L0.02	L0.06	L0.6
Wabamun Grid 4-2	0.6	L0.003	0.56	1.1	2.5	881	0.21	284	L3	0.021	L0.06	L0.6
Wabamun Grid 4-3	0.7	L0.003	0.5	1.11	2	876	0.46	297	L3	0.035	L0.06	L0.6
Wabamun Grid 4-4	1.3	L0.003	0.553	1.19	1.1	854	0.24	282	4	0.04	L0.06	L0.6
Wabamun Grid 8-1	0.9	L0.003	0.55	1.25	2.2	898	0.41	288	25	0.039	L0.06	L0.6
Wabamun Grid 8-2	1.3	L0.003	0.57	1.28	1.3	876	0.34	297	8	0.024	L0.06	L0.6
Wabamun Grid 8-3-A	1.9	L0.003	0.58	1.34	2.1	893	0.4	289	24	0.026	L0.06	L0.6
Wabamun Grid 10-2	1.2	L0.003	0.52	1.3	5.7	953	0.22	292	4	L0.02	L0.06	L0.6
Wabamun Grid 10-3	0.7	L0.003	0.47	1.31	4.16	958	0.57	294	L3	0.024	L0.06	L0.6
Wabamun Grid 10-4	0.9	L0.003	0.45	1.28	1.2	894	0.59	293	12	0.04	L0.06	2.9
Wabamun Grid 12-1	1.2	L0.003	0.5	1.4	1.3	943	0.58	289	11	L0.02	L0.06	1.8
Wabamun Grid 13-1	0.8	L0.003	0.51	1.43	4.98	951	0.5	289	9	0.03	L0.06	1.4
Wabamun Grid 13-2-A	2	L0.003	0.517	1.44	1.63	931	0.56	300	11	L0.02	L0.06	L0.6
Wabamun Grid 13-5	1.4	L0.003	0.55	1.27	3.6	925	0.35	294	12	0.02	L0.06	L0.6
Wabamun Grid 14-3	0.8	0.011	0.54	1.27	1.38	936	0.47	297	9	0.021	L0.06	L0.6
Wabamun Grid 14-4	1.5	L0.003	0.5	1.2	1.72	930	0.33	284	4	L0.02	L0.06	L0.6
Wabamun Grid 14-5	1.3	L0.003	0.5	1.25	1.5	894	0.36	284	4	*0.04	L0.06	L0.6
Wabamun Grid 14-6	0.8	L0.003	0.56	1.2	2.2	945	0.22	285	L3	L0.02	L0.06	L0.6
Wabamun Grid 14-7	2	L0.003	0.542	1.3	2.3	954	0.35	289	7	0.04	L0.06	L0.6
Wabamun Grid 15-5	0.8	L0.003	0.54	1.22	2.84	952	0.33	285	L3	L0.02	L0.06	2.4
Wabamun Grid 15-6-A	0.8	L0.003	0.54	1.36	1.9	904	0.28	290	5	0.02	L0.06	L0.6
Wabamun Grid 16-2	1	L0.003	0.53	1.39	1.7	942	0.29	286	7	0.02	L0.06	1.8
Wabamun Grid 16-3	1.1	L0.003	0.56	1.31	2.3	933	0.34	290	3.8	0.03	L0.06	L0.6
Wabamun Grid 16-4-A	0.8	L0.003	0.55	1.37	3	950	0.3	288	6	0.04	L0.06	L0.6
Wabamun Grid 17-1	1.7	L0.003	0.57	1.37	2.1	941	0.26	286	12	0.024	L0.06	2.2
Wabamun Grid 18-2	1.9	0.006	0.57	1.34	2.1	953	0.17	270	L3	0.05	L0.06	L0.6
Wabamun Grid 20-1	1.1	L0.003	0.48	1.13	3.11	934	0.24	160	L3	0.045	L0.06	L0.6

Appendix 2 Water analysis of sulphide and total metals data in Wabamun Lake and eight other lakes, 2002 (continued)

Station Name	101920 Titanium ug/L	101921 Thallium ug/L	101922 Uranium ug/L	101923 Vanadium ug/L	101924 Zinc ug/L	101925 Boron ug/L	101926 Chromium ug/L	101931 Strontium ug/L	101936 Iron ug/L	101937 Cobalt ug/L	101938 Nickel ug/L	101979 Mercury ng/L
Gull Lake												
Gull Lake												
Gull Lake	3.5	L0.003	3.32	2.31	1	166	0.44	73.3	44	0.09	0.53	0.8
Sylvan Lake												
Sylvan Lake												
Sylvan Lake	2.4	0.018	1.73	0.94	0.67	59	L0.08	253	10	0.06	L0.06	L0.6
Wizard Lake												
Wizard Lake												
Wizard Lake	2.3	L0.003	0.43	0.059	1.9	35	L0.08	230	198	0.03	0.15	L0.6
Isle Lake												
Isle Lake												
Isle Lake	3.1	L0.003	0.239	0.16	1.1	46	L0.08	206	51	L0.02	0.11	L0.6
Lac Ste. Anne												
Lac Ste. Anne												
Lac Ste. Anne	2.1	L0.003	0.17	0.1	0.47	51	L0.08	191	L3	L0.02	L0.06	L0.6
Bonnie Lake												
Bonnie Lake												
Bonnie Lake	4.4	L0.003	0.48	0.45	2.06	123	0.15	278	25	0.12	L0.06	L0.6
Pigeon Lake												
Pigeon Lake												
Pigeon Lake	2.5	L0.003	0.116	L0.04	0.7	19.3	L0.08	271	L3	0.03	L0.06	L0.6
Amisk Lake												
Amisk Lake												
Amisk Lake	2.3	L0.003	0.231	0.2	0.56	63.7	L0.08	206	43	0.02	L0.06	L0.6

Appendix 3 Water analysis of pesticides in Wabamun Lake, 2002 (concentrations in µg/L)

VMV	Active Ingredient Analysed	Wabamun Grid 2-3 July 22, 2002	Wabamun Grid 10-4 July 23, 2002	Wabamun Grid 14-7 July 24, 2002	Wabamun Grid 20-1 July 24, 2002
100667	2,4-D	L0.005	L0.005	0.015	L0.005
100668	2,4-DB	L0.005	L0.005	L0.005	L0.005
100669	DICHLORPROP(2,4-DP)	L0.005	L0.005	L0.005	L0.005
100670	ALPHA-BENZENEHEXACHLORIDE	L0.005	L0.005	L0.005	L0.005
100671	ALPHA-ENDOSULFAN	L0.005	L0.005	L0.005	L0.005
100672	GAMMA-BENZENEHEXACHLORIDE (LINDANE)	L0.005	L0.005	L0.005	L0.005
100673	METHOXYCHLOR (P,P'-METHOXYCHLOR)	L0.03	L0.03	L0.03	L0.03
100674	ATRAZINE	L0.005	L0.005	L0.005	L0.005
100675	BROMACIL	L0.03	L0.03	L0.03	L0.03
100676	BROMOXYNIL	L0.005	L0.005	L0.005	L0.005
100677	CARBATHIIN (CARBOXIN)	L0.1	L0.1	L0.1	L0.1
100678	CYANAZINE	L0.05	L0.05	L0.05	L0.05
100679	DIAZINON	L0.005	L0.005	L0.005	L0.005
100681	DICLOFOP-METHYL	L0.02	L0.02	L0.02	L0.02
100682	DISULFOTON (DI-SYSTON)	L0.2	L0.2	L0.2	L0.2
100683	DIURON	L0.2	L0.2	L0.2	L0.2
100684	CHLORPYRIFOS (DURSBAN)	L0.005	L0.005	L0.005	L0.005
100685	ETHALFLURALIN (EDGE)	L0.005	L0.005	L0.005	L0.005
100686	ETHION	L0.1	L0.1	L0.1	L0.1
100687	GUTHION	L0.2	L0.2	L0.2	L0.2
100688	CLOPYRALID (LONTREL)	L0.02	L0.02	L0.02	L0.02
100689	MALATHION	L0.05	L0.05	L0.05	L0.05
100690	MCPA	L0.005	L0.005	0.003	L0.005
100691	MCPB	L0.02	L0.02	L0.02	L0.02
100692	MCPP (MECOPROP)	L0.005	L0.005	L0.005	L0.005
100693	PICLORAM (TORDON)	L0.005	L0.005	L0.005	L0.005
100694	PHORATE (THIMET)	L0.005	L0.005	L0.005	L0.005
100695	TERBUFOS	L0.03	L0.03	L0.03	L0.03
100696	TRIALLATE (AVADEXBW)	L0.005	L0.005	L0.005	L0.005
100697	TRIFLURALIN(TREFLAN)	L0.005	L0.005	L0.005	L0.005
102088	IMAZAMETHABENZ-METHYL	L0.05	L0.05	L0.05	L0.05
102609	DESETHYL ATRAZINE	L0.05	L0.05	L0.05	L0.05
102610	DEISOPROPYL ATRAZINE	L0.05	L0.05	L0.05	L0.05
102611	QUINCLORAC	L0.005	L0.005	L0.005	L0.005
102612	IMAZETHAPYR	L0.02	L0.02	L0.02	L0.02
102613	FENOXAPROP-P-ETHYL	L0.04	L0.04	L0.04	L0.04
102614	PYRIDABEN	L0.02	L0.02	L0.02	L0.02
102618	DIMETHOATE (CYGON)	L0.05	L0.05	L0.05	L0.05
103141	IMAZAMOX	L0.02	L0.02	L0.02	L0.02
103639	DICAMBA (BANVEL)	L0.005	L0.005	L0.005	L0.005
103824	SIMAZINE	L0.01	L0.01	L0.01	L0.01
103825	TRICLOPYR	L0.01	L0.01	L0.01	L0.01

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
a. Results of Wabamun Lake Water Analyses									
AB05DE2101	Wabamun Grid 1-1-A	1 Km East Of Seba Beach (South Node) And Seba Transect Point A	22-Jul-02 10:17	0.1	8.82	8.56	535	21.08	345
AB05DE2101	Wabamun Grid 1-1-A	1 Km East Of Seba Beach (South Node) And Seba Transect Point A	22-Jul-02 10:19	3.5	8.54	8.55	535	20.64	350
AB05DE2101	Wabamun Grid 1-1-A	1 Km East Of Seba Beach (South Node) And Seba Transect Point A	22-Jul-02 10:20	6.9	6.07	8.4	537	19.93	267
AB05DE2105	Wabamun Grid 1-2	1 Km East Of Seba Beach	22-Jul-02 10:40	0.1	9.04	8.57	536	21.23	349
AB05DE2105	Wabamun Grid 1-2	1 Km East Of Seba Beach	22-Jul-02 10:41	4	7.7	8.51	535	20.31	353
AB05DE2105	Wabamun Grid 1-2	1 Km East Of Seba Beach	22-Jul-02 10:43	7.2	5.53	8.4	538	19.81	160
AB05DE2106	Wabamun Grid 2-1	2 Km East Of Seba Beach (South Node)	22-Jul-02 09:51	5	7.75	8.58	534	20.29	195
AB05DE2106	Wabamun Grid 2-1	2 Km East Of Seba Beach (South Node)	22-Jul-02 09:54	0.1	8.82	8.58	535	20.92	479
AB05DE2106	Wabamun Grid 2-1	2 Km East Of Seba Beach (South Node)	22-Jul-02 09:45	9	4.26	8.26	538	19.62	25
AB05DE2107	Wabamun Grid 2-2	2 Km East Of Seba Beach	22-Jul-02 11:03	0.1	8.8	8.57	535	21.07	316
AB05DE2107	Wabamun Grid 2-2	2 Km East Of Seba Beach	22-Jul-02 11:05	5	7.18	8.48	535	20.35	322
AB05DE2107	Wabamun Grid 2-2	2 Km East Of Seba Beach	22-Jul-02 10:15	9.4	0.44	7.72	549	18.46	-28
AB05DE2108	Wabamun Grid 2-3	2 Km East Of Seba Beach	22-Jul-02 11:43	0.1	9.12	8.55	534	21.14	262
AB05DE2108	Wabamun Grid 2-3	2 Km East Of Seba Beach	22-Jul-02 11:44	4	8.41	8.57	534	20.52	272
AB05DE2108	Wabamun Grid 2-3	2 Km East Of Seba Beach	22-Jul-02 10:35	7.5	5.92	8.38	536	19.86	259
AB05DE2109	Wabamun Grid 3-1	3 Km East Of Seba Beach (South Node)	22-Jul-02 12:52	0.1	8.94	8.61	537	21.16	300
AB05DE2109	Wabamun Grid 3-1	3 Km East Of Seba Beach (South Node)	22-Jul-02 12:54	1.9	8.21	8.58	537	20.6	306
AB05DE2110	Wabamun Grid 3-2	3 Km East Of Seba Beach	22-Jul-02 12:34	0.1	8.86	8.62	536	21.49	290
AB05DE2110	Wabamun Grid 3-2	3 Km East Of Seba Beach	22-Jul-02 12:36	5	7.59	8.55	535	20.19	298
AB05DE2110	Wabamun Grid 3-2	3 Km East Of Seba Beach	22-Jul-02 12:38	9.8	0.41	7.85	542	19.23	305
AB05DE2111	Wabamun Grid 3-3	3 Km East Of Seba Beach	22-Jul-02 12:19	0.1	8.95	8.63	535	21.3	279
AB05DE2111	Wabamun Grid 3-3	3 Km East Of Seba Beach	22-Jul-02 12:20	5	8.34	8.59	534	20.3	284
AB05DE2111	Wabamun Grid 3-3	3 Km East Of Seba Beach	22-Jul-02 12:22	9.6	0.87	7.88	541	19.16	274
AB05DE2112	Wabamun Grid 3-4	3 Km East Of Seba Beach	22-Jul-02 12:00	0.1	9.03	8.57	534	21.01	278
AB05DE2112	Wabamun Grid 3-4	3 Km East Of Seba Beach	22-Jul-02 12:01	4.5	8.17	8.56	534	20.46	286
AB05DE2112	Wabamun Grid 3-4	3 Km East Of Seba Beach	22-Jul-02 12:03	8.4	3.27	8.23	537	19.59	138
AB05DE2113	Wabamun Grid 4-1	4 Km East Of Seba Beach (South Node)	22-Jul-02 13:22	0.1	8.76	8.64	532	21.47	331
AB05DE2113	Wabamun Grid 4-1	4 Km East Of Seba Beach (South Node)	22-Jul-02 13:23	1.5	9.92	8.66	531	20.69	333
AB05DE2114	Wabamun Grid 4-2	4 Km East Of Seba Beach	22-Jul-02 13:36	0.5	9.27	8.65	534	21.45	336
AB05DE2114	Wabamun Grid 4-2	4 Km East Of Seba Beach	22-Jul-02 13:38	4.8	8.37	8.6	533	20.22	341
AB05DE2114	Wabamun Grid 4-2	4 Km East Of Seba Beach	22-Jul-02 11:50	9.1	2.8	8.19	540	19.56	190
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 14:06	0.1	9.05	8.66	534	21.5	NA
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 14:08	4.6	8.64	8.61	534	20.28	NA

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 11:15	9.2	3.88	8.27	538	19.55	NA
AB05DE2116	Wabamun Grid 4-4	4 Km East Of Seba Beach	22-Jul-02 14:18	0.1	8.83	8.64	535	21.2	NA
AB05DE2116	Wabamun Grid 4-4	4 Km East Of Seba Beach	22-Jul-02 14:20	4.6	7.27	8.55	535	20.17	NA
AB05DE2116	Wabamun Grid 4-4	4 Km East Of Seba Beach	22-Jul-02 10:55	8.8	6.63	8.48	535	19.7	NA
AB05DE2117	Wabamun Grid 4-5	4 Km East Of Seba Beach	22-Jul-02 14:48	0.1	9.66	8.65	534	21.96	NA
AB05DE2117	Wabamun Grid 4-5	4 Km East Of Seba Beach	22-Jul-02 14:49	1	9.35	8.66	534	22.01	NA
AB05DE2118	Wabamun Grid 5-1	5 Km East Of Seba Beach (South Node)	22-Jul-02 15:31	0.1	11.34	8.8	532	22.65	NA
AB05DE2119	Wabamun Grid 5-2	5 Km East Of Seba Beach	22-Jul-02 15:19	0.1	9.21	8.67	535	21.37	NA
AB05DE2119	Wabamun Grid 5-2	5 Km East Of Seba Beach	22-Jul-02 15:21	4.1	8.75	8.65	534	20.32	NA
AB05DE2119	Wabamun Grid 5-2	5 Km East Of Seba Beach	22-Jul-02 15:23	7.7	7.26	8.59	534	19.89	NA
AB05DE2120	Wabamun Grid 5-3	5 Km East Of Seba Beach	22-Jul-02 15:09	0.1	9.12	8.67	535	21.37	NA
AB05DE2120	Wabamun Grid 5-3	5 Km East Of Seba Beach	22-Jul-02 15:11	4.4	8.32	8.61	534	20.17	NA
AB05DE2120	Wabamun Grid 5-3	5 Km East Of Seba Beach	22-Jul-02 15:12	8.3	6.13	8.45	536	19.67	NA
AB05DE2121	Wabamun Grid 5-4-A	5 Km East Of Seba Beach (North Node) And Fallis West Transect Point A	22-Jul-02 14:58	0.1	8.89	8.63	534	21.13	NA
AB05DE2121	Wabamun Grid 5-4-A	5 Km East Of Seba Beach (North Node) And Fallis West Transect Point A	22-Jul-02 15:00	3.5	9.13	8.65	533	20.6	NA
AB05DE2121	Wabamun Grid 5-4-A	5 Km East Of Seba Beach (North Node) And Fallis West Transect Point A	22-Jul-02 15:01	6.6	7.15	8.51	534	19.75	NA
AB05DE2125	Wabamun Grid 6-1-A	6 Km East Of Seba Beach (South Node) And Beaver Transect Point A	23-Jul-02 15:41	0.1	9.25	8.67	534	21.3	NA
AB05DE2125	Wabamun Grid 6-1-A	6 Km East Of Seba Beach (South Node) And Beaver Transect Point A	23-Jul-02 15:42	3.5	8.65	8.64	534	20.28	NA
AB05DE2125	Wabamun Grid 6-1-A	6 Km East Of Seba Beach (South Node) And Beaver Transect Point A	23-Jul-02 15:43	6.5	7.4	8.56	534	19.96	NA
AB05DE2129	Wabamun Grid 6-2	6 Km East Of Seba Beach	23-Jul-02 15:51	0.1	9.19	8.67	535	21.58	NA
AB05DE2129	Wabamun Grid 6-2	6 Km East Of Seba Beach	23-Jul-02 15:54	4.7	8.62	8.63	534	20.12	NA
AB05DE2129	Wabamun Grid 6-2	6 Km East Of Seba Beach	23-Jul-02 15:56	8.9	6.14	8.46	536	19.73	NA
AB05DE2130	Wabamun Grid 6-3	6 Km East Of Seba Beach	23-Jul-02 16:03	0.1	9.38	8.67	536	21.69	NA
AB05DE2130	Wabamun Grid 6-3	6 Km East Of Seba Beach	23-Jul-02 16:05	4	9.06	8.66	535	20.72	NA
AB05DE2130	Wabamun Grid 6-3	6 Km East Of Seba Beach	23-Jul-02 16:07	7.5	6.34	8.47	536	19.81	NA
AB05DE2131	Wabamun Grid 7-1	0.5 Km East Of Fallis Point (South Node)	23-Jul-02 13:09	0.1	8.75	8.73	532	21.49	389
AB05DE2131	Wabamun Grid 7-1	0.5 Km East Of Fallis Point (South Node)	23-Jul-02 13:10	4.3	7.88	8.74	529	20.23	392
AB05DE2131	Wabamun Grid 7-1	0.5 Km East Of Fallis Point (South Node)	23-Jul-02 13:12	8.2	6.67	8.62	531	19.99	394
AB05DE2132	Wabamun Grid 7-2	0.5 Km East Of Fallis Point	23-Jul-02 13:17	0.1	8.59	8.76	531	21.79	387
AB05DE2132	Wabamun Grid 7-2	0.5 Km East Of Fallis Point	23-Jul-02 13:19	4.6	7.38	8.7	530	20.46	390
AB05DE2132	Wabamun Grid 7-2	0.5 Km East Of Fallis Point	23-Jul-02 13:20	8.8	4.54	8.45	532	19.87	396
AB05DE2133	Wabamun Grid 7-3	0.5 Km East Of Fallis Point	23-Jul-02 13:25	0.1	8.54	8.79	532	22.03	385
AB05DE2133	Wabamun Grid 7-3	0.5 Km East Of Fallis Point	23-Jul-02 13:25	3.4	8.32	8.79	531	21.11	387
AB05DE2133	Wabamun Grid 7-3	0.5 Km East Of Fallis Point	23-Jul-02 13:27	6	7.27	8.71	532	20.77	289
AB05DE2134	Wabamun Grid 7-4	0.5 Km East Of Fallis Point	23-Jul-02 13:50	0.1	8.61	8.75	534	22.86	266
AB05DE2134	Wabamun Grid 7-4	0.5 Km East Of Fallis Point	23-Jul-02 13:51	1.9	8.55	8.74	533	22.33	276

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
AB05DE2134	Wabamun Grid 7-4	0.5 Km East Of Fallis Point	23-Jul-02 13:52	3.3	8.5	8.74	534	22.24	283
AB05DE2135	Wabamun Grid 8-1	1.5 Km East Of Fallis Point (South Node)	22-Jul-02 12:20	8.5	4.47	8.46	532	19.78	353
AB05DE2135	Wabamun Grid 8-1	1.5 Km East Of Fallis Point (South Node)	23-Jul-02 14:28	0.1	8.04	8.72	532	21.87	345
AB05DE2135	Wabamun Grid 8-1	1.5 Km East Of Fallis Point (South Node)	23-Jul-02 14:29	4.5	7.58	8.73	530	20.25	349
AB05DE2136	Wabamun Grid 8-2	1.5 Km East Of Fallis Point	23-Jul-02 14:17	0.1	8.35	8.76	532	21.88	336
AB05DE2136	Wabamun Grid 8-2	1.5 Km East Of Fallis Point	23-Jul-02 14:18	4.3	8.32	8.8	529	20.51	340
AB05DE2136	Wabamun Grid 8-2	1.5 Km East Of Fallis Point	22-Jul-02 12:40	8.1	3.54	8.37	534	19.69	347
AB05DE2137	Wabamun Grid 8-3-A	1.5 Km East Of Fallis Point And Fallis East Transect Point A	23-Jul-02 14:08	0.1	8.39	8.77	533	22.43	325
AB05DE2137	Wabamun Grid 8-3-A	1.5 Km East Of Fallis Point And Fallis East Transect Point A	23-Jul-02 14:09	3.3	8.57	8.82	530	20.97	329
AB05DE2137	Wabamun Grid 8-3-A	1.5 Km East Of Fallis Point And Fallis East Transect Point A	22-Jul-02 12:55	6.2	7.72	8.74	530	20.53	333
AB05DE2142	Wabamun Grid 8-4	1.5 Km East Of Fallis Point	23-Jul-02 14:01	0.1	8.39	8.72	535	23.19	311
AB05DE2142	Wabamun Grid 8-4	1.5 Km East Of Fallis Point	23-Jul-02 14:02	2.3	8.61	8.81	532	21.9	316
AB05DE2142	Wabamun Grid 8-4	1.5 Km East Of Fallis Point	23-Jul-02 14:03	4.1	8.56	8.79	530	21.45	319
AB05DE2143	Wabamun Grid 9-1	2.5 Km East Of Fallis Point (South Node)	23-Jul-02 14:42	0.2	8.96	8.77	530	22.56	349
AB05DE2144	Wabamun Grid 9-2	2.5 Km East Of Fallis Point	23-Jul-02 14:52	0.1	8	8.74	532	22.2	355
AB05DE2144	Wabamun Grid 9-2	2.5 Km East Of Fallis Point	23-Jul-02 14:53	4.3	6.76	8.72	530	20.2	361
AB05DE2144	Wabamun Grid 9-2	2.5 Km East Of Fallis Point	23-Jul-02 14:55	8.2	4.66	8.47	532	19.78	365
AB05DE2145	Wabamun Grid 9-3	2.5 Km East Of Fallis Point	23-Jul-02 15:02	0.1	8.15	8.75	533	22.78	358
AB05DE2145	Wabamun Grid 9-3	2.5 Km East Of Fallis Point	23-Jul-02 15:04	3.9	8.24	8.83	529	20.58	362
AB05DE2145	Wabamun Grid 9-3	2.5 Km East Of Fallis Point	23-Jul-02 15:06	7.4	4.46	8.47	532	19.88	369
AB05DE2146	Wabamun Grid 9-4	2.5 Km East Of Fallis Point	23-Jul-02 15:13	0.1	8.29	8.76	533	23.48	359
AB05DE2146	Wabamun Grid 9-4	2.5 Km East Of Fallis Point	23-Jul-02 15:14	3.3	8.56	8.86	530	20.93	363
AB05DE2146	Wabamun Grid 9-4	2.5 Km East Of Fallis Point	23-Jul-02 15:15	6.1	8.18	8.8	529	20.63	365
AB05DE2147	Wabamun Grid 10-1	3.5 Km East Of Fallis Point (South Node)	23-Jul-02 16:13	0.1	7.92	8.71	533	21.76	370
AB05DE2147	Wabamun Grid 10-1	3.5 Km East Of Fallis Point (South Node)	23-Jul-02 16:14	2.7	7.9	8.82	529	20.34	373
AB05DE2147	Wabamun Grid 10-1	3.5 Km East Of Fallis Point (South Node)	23-Jul-02 16:15	5	7.49	8.73	529	20.18	374
AB05DE2148	Wabamun Grid 10-2	3.5 Km East Of Fallis Point	23-Jul-02 15:56	0.1	8.2	8.76	533	23.26	364
AB05DE2148	Wabamun Grid 10-2	3.5 Km East Of Fallis Point	23-Jul-02 15:58	4	8.22	8.81	528	20.49	369
AB05DE2148	Wabamun Grid 10-2	3.5 Km East Of Fallis Point	23-Jul-02 15:55	7.5	4.56	8.5	531	19.87	375
AB05DE2149	Wabamun Grid 10-3	3.5 Km East Of Fallis Point	23-Jul-02 15:40	6.9	4.93	8.52	532	20.02	377
AB05DE2149	Wabamun Grid 10-3	3.5 Km East Of Fallis Point	23-Jul-02 15:41	0.1	8.27	8.76	533	23.53	365
AB05DE2149	Wabamun Grid 10-3	3.5 Km East Of Fallis Point	23-Jul-02 15:44	3.7	8.5	8.82	529	20.83	371
AB05DE2150	Wabamun Grid 10-4	3.5 Km East Of Fallis Point	23-Jul-02 15:25	0.1	8.08	8.69	534	21.92	364
AB05DE2150	Wabamun Grid 10-4	3.5 Km East Of Fallis Point	23-Jul-02 15:27	3.4	8.49	8.82	529	20.91	368
AB05DE2150	Wabamun Grid 10-4	3.5 Km East Of Fallis Point	23-Jul-02 15:25	6.3	6.96	8.71	531	20.69	372
AB05DE2151	Wabamun Grid 11-1	4.5 Km East Of Fallis Point (South Node)	23-Jul-02 12:05	0.2	8.19	8.73	531	20.97	381

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
AB05DE2151	Wabamun Grid 11-1	4.5 Km East Of Fallis Point (South Node)	23-Jul-02 12:06	2.5	7.4	8.7	530	20.09	383
AB05DE2152	Wabamun Grid 11-2	4.5 Km East Of Fallis Point	23-Jul-02 12:12	0.1	8.26	8.75	530	21.44	382
AB05DE2152	Wabamun Grid 11-2	4.5 Km East Of Fallis Point	23-Jul-02 12:13	3.7	7.57	8.74	529	20.06	385
AB05DE2152	Wabamun Grid 11-2	4.5 Km East Of Fallis Point	23-Jul-02 12:14	6.9	6	8.6	531	19.81	387
AB05DE2153	Wabamun Grid 11-3	4.5 Km East Of Fallis Point	24-Jul-02 10:01	0.1	8.13	8.66	532	21.23	405
AB05DE2153	Wabamun Grid 11-3	4.5 Km East Of Fallis Point	24-Jul-02 10:03	3.7	8.07	8.68	531	20.97	406
AB05DE2153	Wabamun Grid 11-3	4.5 Km East Of Fallis Point	24-Jul-02 10:05	6.9	5.69	8.49	532	19.83	411
AB05DE2154	Wabamun Grid 11-4	4.5 Km East Of Fallis Point	24-Jul-02 10:11	0.1	8.29	8.69	533	21.41	397
AB05DE2154	Wabamun Grid 11-4	4.5 Km East Of Fallis Point	24-Jul-02 10:13	3.4	8.17	8.69	531	20.86	399
AB05DE2154	Wabamun Grid 11-4	4.5 Km East Of Fallis Point	24-Jul-02 10:15	6.3	5.25	8.46	533	19.8	404
AB05DE2155	Wabamun Grid 11-5	4.5 Km East Of Fallis Point	24-Jul-02 10:20	0.1	8.38	8.69	532	21.67	394
AB05DE2155	Wabamun Grid 11-5	4.5 Km East Of Fallis Point	24-Jul-02 10:22	3	8.31	8.69	532	21.25	396
AB05DE2155	Wabamun Grid 11-5	4.5 Km East Of Fallis Point	24-Jul-02 10:24	5.5	4.06	8.33	535	20.01	404
AB05DE2156	Wabamun Grid 12-1	North Of Sundance Plant (South Node)	23-Jul-02 11:18	0.1	8.34	8.75	529	21.48	386
AB05DE2156	Wabamun Grid 12-1	North Of Sundance Plant (South Node)	23-Jul-02 11:19	3.1	7.9	8.75	527	20.25	388
AB05DE2156	Wabamun Grid 12-1	North Of Sundance Plant (South Node)	23-Jul-02 11:15	5.8	7.02	8.68	528	20.11	390
AB05DE2157	Wabamun Grid 12-2	North Of Sundance Plant	23-Jul-02 12:21	0.1	8.33	8.76	532	22.17	382
AB05DE2157	Wabamun Grid 12-2	North Of Sundance Plant	23-Jul-02 12:22	3.6	8.23	8.82	528	20.42	383
AB05DE2157	Wabamun Grid 12-2	North Of Sundance Plant	23-Jul-02 12:23	6.8	4.52	8.51	534	19.69	390
AB05DE2158	Wabamun Grid 12-3	North Of Sundance Plant	24-Jul-02 09:51	0.1	8.08	8.67	531	21.19	402
AB05DE2158	Wabamun Grid 12-3	North Of Sundance Plant	24-Jul-02 09:54	3.3	7.87	8.66	532	20.97	404
AB05DE2158	Wabamun Grid 12-3	North Of Sundance Plant	24-Jul-02 09:56	6.2	3.34	8.3	535	19.54	412
AB05DE2159	Wabamun Grid 12-4	North Of Sundance Plant	24-Jul-02 10:40	0.1	8.27	8.68	532	21.64	404
AB05DE2159	Wabamun Grid 12-4	North Of Sundance Plant	24-Jul-02 10:42	3	8.21	8.69	532	21.16	405
AB05DE2159	Wabamun Grid 12-4	North Of Sundance Plant	24-Jul-02 10:45	5.6	3.28	8.44	533	19.99	410
AB05DE2160	Wabamun Grid 12-5	North Of Sundance Plant	24-Jul-02 10:29	0.1	8.33	8.69	532	21.9	398
AB05DE2160	Wabamun Grid 12-5	North Of Sundance Plant	24-Jul-02 10:32	1.5	8.27	8.7	532	21.78	400
AB05DE2160	Wabamun Grid 12-5	North Of Sundance Plant	24-Jul-02 10:35	2.8	6.55	8.59	531	20.84	404
AB05DE2161	Wabamun Grid 13-1	1 Km East Of Sundance Plant (South Node)	23-Jul-02 09:53	0.1	8.05	8.7	529	20.3	398
AB05DE2161	Wabamun Grid 13-1	1 Km East Of Sundance Plant (South Node)	23-Jul-02 09:50	1.5	7.69	8.69	529	19.97	398
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 10:17	0.1	8.19	8.71	530	20.86	393
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 10:19	3.1	8.08	8.72	529	20.28	395
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 10:15	5.7	4.41	8.44	534	19.59	401
AB05DE2163	Wabamun Grid 13-3	1 Km East Of Sundance Plant	23-Jul-02 10:40	0.1	10.68	8.14	538	21.19	426
AB05DE2163	Wabamun Grid 13-3	1 Km East Of Sundance Plant	23-Jul-02 10:43	3.5	10.54	8.45	538	20.43	427
AB05DE2163	Wabamun Grid 13-3	1 Km East Of Sundance Plant	23-Jul-02 10:47	6.2	4.93	8.15	544	19.33	433

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
AB05DE2164	Wabamun Grid 13-4	1 Km East Of Sundance Plant	24-Jul-02 11:11	0.1	7.92	8.66	533	21.9	412
AB05DE2164	Wabamun Grid 13-4	1 Km East Of Sundance Plant	24-Jul-02 11:13	3.1	7.78	8.67	532	21	413
AB05DE2164	Wabamun Grid 13-4	1 Km East Of Sundance Plant	24-Jul-02 11:16	5.8	6.55	8.6	530	20.39	415
AB05DE2165	Wabamun Grid 13-5	1 Km East Of Sundance Plant	24-Jul-02 10:54	0.1	8.08	8.69	532	21.95	407
AB05DE2165	Wabamun Grid 13-5	1 Km East Of Sundance Plant	24-Jul-02 10:56	2.7	7.71	8.67	531	21.12	409
AB05DE2165	Wabamun Grid 13-5	1 Km East Of Sundance Plant	24-Jul-02 10:50	5	3.35	8.33	533	19.55	417
AB05DE2166	Wabamun Grid 14-1	2 Km East Of Sundance Plant (South Node)	23-Jul-02 09:27	0.1	13.21	9.11	502	21.21	357
AB05DE2166	Wabamun Grid 14-1	2 Km East Of Sundance Plant (South Node)	23-Jul-02 09:29	0.9	14.84	9.23	501	20.9	360
AB05DE2168	Wabamun Grid 14-2	2 Km East Of Sundance Plant	23-Jul-02 09:48	2.1	11.12	8.78	532	20.27	369
AB05DE2168	Wabamun Grid 14-2	2 Km East Of Sundance Plant	23-Jul-02 09:49	0.1	10.69	8.73	534	20.72	367
AB05DE2170	Wabamun Grid 14-3	2 Km East Of Sundance Plant	23-Jul-02 09:36	0.1	8.56	8.74	530	20.48	398
AB05DE2170	Wabamun Grid 14-3	2 Km East Of Sundance Plant	23-Jul-02 09:38	2.3	7.91	8.71	529	19.94	400
AB05DE2170	Wabamun Grid 14-3	2 Km East Of Sundance Plant	23-Jul-02 09:35	4.1	7.3	8.68	528	19.5	402
AB05DE2172	Wabamun Grid 14-4	2 Km East Of Sundance Plant	23-Jul-02 09:19	0.1	8.65	8.73	529	20.62	396
AB05DE2172	Wabamun Grid 14-4	2 Km East Of Sundance Plant	23-Jul-02 09:20	2.6	8.21	8.71	529	20.23	398
AB05DE2172	Wabamun Grid 14-4	2 Km East Of Sundance Plant	23-Jul-02 09:15	4.7	7.54	8.69	526	19.73	400
AB05DE2173	Wabamun Grid 14-5	2 Km East Of Sundance Plant	23-Jul-02 09:03	0.1	8.9	8.75	529	20.74	394
AB05DE2173	Wabamun Grid 14-5	2 Km East Of Sundance Plant	23-Jul-02 09:07	2.7	8.44	8.73	529	20.41	397
AB05DE2173	Wabamun Grid 14-5	2 Km East Of Sundance Plant	23-Jul-02 08:50	5	7.34	8.67	529	20.11	400
AB05DE2174	Wabamun Grid 14-6	2 Km East Of Sundance Plant	24-Jul-02 11:24	0.1	7.94	8.66	532	21.83	409
AB05DE2174	Wabamun Grid 14-6	2 Km East Of Sundance Plant	24-Jul-02 11:25	3.4	8.23	8.7	531	21.02	410
AB05DE2174	Wabamun Grid 14-6	2 Km East Of Sundance Plant	24-Jul-02 11:20	6.3	7.9	8.68	529	20.7	412
AB05DE2175	Wabamun Grid 14-7	2 Km East Of Sundance Plant	24-Jul-02 11:38	0.1	7.79	8.65	530	22.11	410
AB05DE2175	Wabamun Grid 14-7	2 Km East Of Sundance Plant	24-Jul-02 11:39	2.7	7.79	8.69	529	20.76	411
AB05DE2175	Wabamun Grid 14-7	2 Km East Of Sundance Plant	24-Jul-02 11:35	4.9	6.06	8.56	531	20.13	414
AB05DE2176	Wabamun Grid 15-1	3 Km East Of Sundance Plant (South Node)	23-Jul-02 09:10	0.1	10.04	8.73	533	20.49	370
AB05DE2176	Wabamun Grid 15-1	3 Km East Of Sundance Plant (South Node)	23-Jul-02 09:11	1.6	9.97	8.75	535	20.24	373
AB05DE2177	Wabamun Grid 15-2	3 Km East Of Sundance Plant	23-Jul-02 08:47	0.1	9.87	8.73	533	20.39	395
AB05DE2177	Wabamun Grid 15-2	3 Km East Of Sundance Plant	23-Jul-02 08:50	1	10.11	8.76	533	20.33	397
AB05DE2178	Wabamun Grid 15-3	3 Km East Of Sundance Plant	24-Jul-02 08:59	0.1	8.71	8.72	529	21.21	396
AB05DE2178	Wabamun Grid 15-3	3 Km East Of Sundance Plant	24-Jul-02 09:01	2	8.64	8.7	528	21.14	399
AB05DE2178	Wabamun Grid 15-3	3 Km East Of Sundance Plant	24-Jul-02 09:02	3.5	8.42	8.7	529	20.86	401
AB05DE2179	Wabamun Grid 15-4	3 Km East Of Sundance Plant	24-Jul-02 08:45	0.1	8.54	8.7	528	21	396
AB05DE2179	Wabamun Grid 15-4	3 Km East Of Sundance Plant	24-Jul-02 08:47	3	8.53	8.7	529	20.97	398
AB05DE2179	Wabamun Grid 15-4	3 Km East Of Sundance Plant	24-Jul-02 08:50	5.5	8.41	8.69	529	20.83	402
AB05DE2180	Wabamun Grid 15-5	3 Km East Of Sundance Plant	24-Jul-02 12:06	0.1	8.15	8.7	531	21.87	414

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
AB05DE2180	Wabamun Grid 15-5	3 Km East Of Sundance Plant	24-Jul-02 12:08	2.9	8.17	8.71	530	20.91	414
AB05DE2180	Wabamun Grid 15-5	3 Km East Of Sundance Plant	24-Jul-02 12:00	5.3	8.18	8.7	530	20.77	415
AB05DE2181	Wabamun Grid 15-6-A	3 Km East Of Sundance Plant (North Node) And Alison Bay West Transect Point A	24-Jul-02 11:51	0.1	7.49	8.63	531	21.9	408
AB05DE2181	Wabamun Grid 15-6-A	3 Km East Of Sundance Plant (North Node) And Alison Bay West Transect Point A	24-Jul-02 11:53	2.2	7.47	8.65	530	20.7	410
AB05DE2181	Wabamun Grid 15-6-A	3 Km East Of Sundance Plant (North Node) And Alison Bay West Transect Point A	24-Jul-02 11:50	4	7.31	8.65	530	20.55	411
AB05DE2185	Wabamun Grid 16-1	4 Km East Of Sundance Plant (South Node)	24-Jul-02 09:13	0.1	8.04	8.67	528	21.88	399
AB05DE2185	Wabamun Grid 16-1	4 Km East Of Sundance Plant (South Node)	24-Jul-02 09:15	1.1	7.99	8.67	528	21.87	400
AB05DE2186	Wabamun Grid 16-2	4 Km East Of Sundance Plant	24-Jul-02 09:27	0.1	8.5	8.71	530	21.64	400
AB05DE2186	Wabamun Grid 16-2	4 Km East Of Sundance Plant	24-Jul-02 09:29	1.8	8.54	8.71	529	21.51	402
AB05DE2186	Wabamun Grid 16-2	4 Km East Of Sundance Plant	24-Jul-02 09:25	2.8	8.61	8.72	529	21.41	403
AB05DE2187	Wabamun Grid 16-3	4 Km East Of Sundance Plant	24-Jul-02 12:18	0.1	8.15	8.7	531	21.53	419
AB05DE2187	Wabamun Grid 16-3	4 Km East Of Sundance Plant	24-Jul-02 12:19	2.4	8.24	8.71	530	21.18	420
AB05DE2187	Wabamun Grid 16-3	4 Km East Of Sundance Plant	24-Jul-02 12:15	4.4	8.34	8.71	530	20.93	420
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:38	0.1	7.68	8.66	531	21.65	422
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:40	1.9	7.87	8.68	531	21.41	422
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:30	3.3	7.82	8.69	530	20.81	423
AB05DE2192	Wabamun Grid 17-1	Off Point Alison	24-Jul-02 13:50	0.1	8.45	8.77	530	23.73	408
AB05DE2192	Wabamun Grid 17-1	Off Point Alison	24-Jul-02 13:51	2.2	8.58	8.82	527	21.74	411
AB05DE2192	Wabamun Grid 17-1	Off Point Alison	24-Jul-02 13:45	4	8.35	8.8	528	21.18	412
AB05DE2193	Wabamun Grid 18-1-A	1 Km East Of Point Alison (South Node) And Outlet Transect Point A	24-Jul-02 14:00	0.1	8.95	8.8	527	23.48	408
AB05DE2193	Wabamun Grid 18-1-A	1 Km East Of Point Alison (South Node) And Outlet Transect Point A	24-Jul-02 14:02	1.9	9.58	8.87	524	22.63	409
AB05DE2193	Wabamun Grid 18-1-A	1 Km East Of Point Alison (South Node) And Outlet Transect Point A	24-Jul-02 14:03	3.4	8.91	8.83	526	21.56	411
AB05DE2198	Wabamun Grid 18-2	1 Km East Of Point Alison	24-Jul-02 14:11	0.1	8.6	8.73	531	24.87	405
AB05DE2198	Wabamun Grid 18-2	1 Km East Of Point Alison	24-Jul-02 14:12	1.4	8.91	8.82	528	24.04	406
AB05DE2198	Wabamun Grid 18-2	1 Km East Of Point Alison	24-Jul-02 14:10	2.4	9.6	8.87	524	22.43	407
AB05DE2200	Wabamun Grid 19-1	2 Km East Of Point Alison (South Node)	25-Jul-02 13:38	0.1	8.54	8.84	538	23.86	433
AB05DE2200	Wabamun Grid 19-1	2 Km East Of Point Alison (South Node)	25-Jul-02 13:39	1	10.21	8.85	530	23.54	434
AB05DE2201	Wabamun Grid 19-2	2 Km East Of Point Alison	25-Jul-02 13:50	0.1	9.31	8.9	531	23.27	435
AB05DE2201	Wabamun Grid 19-2	2 Km East Of Point Alison	25-Jul-02 13:52	2	10.92	8.99	523	22.71	437
AB05DE2202	Wabamun Grid 19-3	2 Km East Of Point Alison	25-Jul-02 14:05	0.1	12.28	9.12	520	24.24	425
AB05DE2202	Wabamun Grid 19-3	2 Km East Of Point Alison	25-Jul-02 14:06	1.3	12.96	9.14	519	24.19	426
AB05DE2203	Wabamun Grid 20-1	Moonlight Bay (Park)	24-Jul-02 14:45	0.1	13.84	9.43	511	24.4	401
AB05DE2203	Wabamun Grid 20-1	Moonlight Bay (Park)	24-Jul-02 14:45	1.3	14.45	9.46	510	24.46	400
AB05DE2204	Wabamun Grid 20-2	Moonlight Bay	25-Jul-02 14:21	0.1	11.35	9.28	513	23.97	425
AB05DE2204	Wabamun Grid 20-2	Moonlight Bay	25-Jul-02 14:23	1.5	11.58	9.3	513	24.02	424
AB05DE2204	Wabamun Grid 20-2	Moonlight Bay	25-Jul-02 14:24	2.9	9.66	9.16	513	22.12	427

Appendix 4 Water chemistry profiles in Wabamun Lake and eight other lakes, 2002 (continued)

Station No.	Station Name	Station Description	Sample Date/Time	97251 Depth m	100922 Dissolved Oxygen (Field Meter) mg/L	100923 pH (Field) units	100924 Specific Conductance (Field) uS/cm	100925 Water Temperature deg C	2031 Redox Potential mV
b. Results of Analyses of Eight Lakes Sampled in 2002									
AB05CC0620	Gull Lake	Center Profile Site 2	21-Aug-02 11:30	1	10.75	9.16	1369	16.41	382
AB05CC0620	Gull Lake	Center Profile Site 2	21-Aug-02 11:31	3	10.66	9.18	1368	15.7	383
AB05CC0620	Gull Lake	Center Profile Site 2	21-Aug-02 11:32	6	5.65	9.16	1373	14.86	384
AB05CC0650	Sylvan Lake	Profile at Greatest Depth	22-Aug-02 12:00	1	9.32	8.81	613	17.26	385
AB05CC0650	Sylvan Lake	Profile at Greatest Depth	22-Aug-02 12:01	7	9.35	8.85	611	15.52	385
AB05CC0650	Sylvan Lake	Profile at Greatest Depth	22-Aug-02 12:02	14	8.79	8.85	613	14.9	359
AB05DF0340	Wizard Lake	Profile at Center	28-Aug-02 12:15	1	11.8	8.94	320	20.88	320
AB05DF0340	Wizard Lake	Profile at Center	28-Aug-02 12:16	6	5.26	8.17	345	15.93	345
AB05DF0340	Wizard Lake	Profile at Center	28-Aug-02 12:17	10.5	0.28	7.77	98	15.03	98
AB05EA0470	Isle Lake	Profile at Center	29-Aug-02 10:30	1	10.67	9.03	325	20.08	458
AB05EA0470	Isle Lake	Profile at Center	29-Aug-02 10:31	3	4.88	8.61	333	19.23	457
AB05EA0470	Isle Lake	Profile at Center	29-Aug-02 10:32	5.5	1.47	7.68	336	17.33	457
AB05EA0590	Lac Ste. Anne	East Side Profile at Greatest Depth	05-Sep-02 11:00	1	8.81	8.61	310	15.89	NA
AB05EA0590	Lac Ste. Anne	East Side Profile at Greatest Depth	05-Sep-02 10:11	5	8.52	8.6	308	15.9	NA
AB05EA0590	Lac Ste. Anne	East Side Profile at Greatest Depth	05-Sep-02 10:18	9	8.22	8.6	308	15.88	NA
AB05ED0210	Bonnie Lake	West Profile at Center	03-Sep-02 13:05	1	6.7	8.54	721	18.2	NA
AB05ED0210	Bonnie Lake	West Profile at Center	03-Sep-02 13:06	2	5.95	8.51	721	18.16	NA
AB05ED0210	Bonnie Lake	West Profile at Center	03-Sep-02 13:07	3.5	5.32	8.5	721	18.12	NA
AB05FA0490	Pigeon Lake	Profile at Center	04-Sep-02 11:00	1	8.39	8.53	286	16.28	NA
AB05FA0490	Pigeon Lake	Profile at Center	04-Sep-02 11:01	5	8.32	8.53	286	16.28	NA
AB05FA0490	Pigeon Lake	Profile at Center	04-Sep-02 11:02	9	8.25	8.53	286	16.26	NA
AB06AA0110	Amisk Lake	South Basin Profile	27-Aug-02 11:30	1	9.59	9.1	344	20.1	NA
AB06AA0110	Amisk Lake	South Basin Profile	27-Aug-02 11:31	26	0.31	7.62	387	4.89	139
AB06AA0110	Amisk Lake	South Basin Profile	27-Aug-02 11:32	53	0.28	7.57	392	4.7	87

NA. NO DATA

Appendix 5 Water chemistry quality assurance/quality control data for major ions, nutrients, sulphate and chlorophyll-*a* in Wabamun Lake, 2002

Station No.	Station Name	Station Description	Sample Date/Time	99212 Chloro phyll *a* ug/L	10602 Total Hardness, calc. CaCO3 as mg/L	15421 Total Phosphorus mg/L
Triplicate Splits						
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:20	7.4	137	0.023
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:25	7.1	133	0.027
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:30	7.3	136	0.026
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 11:00	7.8	134	0.022
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 11:05	8.1	134	0.021
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 11:10	7.5	135	0.022
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 13:50	8.4	128	0.021
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 13:55	8.3	128	0.019
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 14:00	8.5	125	0.02
AB10CA0001	Field Blank	Field Blank Generic Stn Number	22-Jul-02 14:05	0.0	L1	L0.001
AB10CA0001	Field Blank	Field Blank Generic Stn Number	23-Jul-02 11:20	0.0	L1	0.001
AB10CA0001	Field Blank	Field Blank Generic Stn Number	24-Jul-02 12:40	0.0	L1	0.001

Station No.	Station Name	Station Description	Sample Date/Time	101484 Sulphide, diss. mg/L	101887 Silver ug/L	101888 Aluminum ug/L
Triplicate Splits						
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:30	L0.001	L0.005	25.2
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:40	L0.001	L0.005	17.5
AB05DE2188	Wabamun Grid 16-4-A	4 Km East Of Sundance Plant (North Node) And Alison Bay East Transect Point A	24-Jul-02 12:50	L0.001	0.007	18.4
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 10:15	0.001	L0.005	23
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 10:20	0.001	L0.005	22.7
AB05DE2162	Wabamun Grid 13-2-A	1 Km East Of Sundance Plant	23-Jul-02 10:30	0.001	L0.005	31.5
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 11:15	0.005	L0.005	20
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 11:20	0.006	L0.005	20.7
AB05DE2115	Wabamun Grid 4-3	4 Km East Of Seba Beach	22-Jul-02 11:25	0.007	0.02	22
AB10CA0001	Field Blank	Field Blank Generic Stn Number	22-Jul-02 13:10			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	22-Jul-02 13:20			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	22-Jul-02 14:05	L0.001	L0.005	1.1
AB10CA0001	Field Blank	Field Blank Generic Stn Number	23-Jul-02 10:45			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	23-Jul-02 10:50			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	23-Jul-02 11:20	L0.001	L0.005	2.6
AB10CA0001	Field Blank	Field Blank Generic Stn Number	24-Jul-02 12:40	L0.001	0.009	1.18
AB10CA0001	Field Blank	Field Blank Generic Stn Number	24-Jul-02 13:10			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	22-Aug-02 12:35			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	21-Aug-02 11:22			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	29-Aug-02 11:00			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	03-Sep-02 13:30			
AB10CA0001	Field Blank	Field Blank Generic Stn Number	05-Sep-02 11:30			

Appendix 5 Water chemistry quality assurance/quality control data for major ions, nutrients, sulphate and chlorophyll a in Wabamun Lake, 2002 (continued)

Station Name	16306 Sulphate, diss. mg/L	2041 Specific Conductance, Lab uS/cm	6201 Bicarbonate, calc. mg/L	6301 Carbonate, calc. mg/L	7105 Nitrite+Nitrate Nitrogen, diss. mg/L	7205 Nitrite, diss. mg/L	9107 Fluoride, diss. mg/L	102616 Silica, Reactive mg/L	10301 pH, Lab units	100536, 207 Total Dissolved Solids, calc. mg/L	10101 Total Alkalinity CaCO3 as mg/L	102085 Sodium, diss. Filt. mg/L	102086 Potassium, diss. Filt. mg/L
Wabamun Grid 16-4-A	51	520	242	12	0.006	0.002	0.37	2.7	8.7	303	219	60.6	9.5
Wabamun Grid 16-4-A	51	522	242	12	L0.005	0.001	0.37	2.8	8.71	303	219	62	9.5
Wabamun Grid 16-4-A	51	522	242	12	L0.005	0.002	0.37	2.7	8.7	307	219	64.5	9.4
Wabamun Grid 13-2-A	53	523	245	11	L0.005	0.001	0.39	2.7	8.64	308	220	64.5	9.5
Wabamun Grid 13-2-A	52	522	246	11	L0.005	0.002	0.38	2.7	8.65	305	220	63.2	8.9
Wabamun Grid 13-2-A	51	522	246	11	L0.005	0.002	0.38	2.6	8.62	306	220	63.8	9.3
Wabamun Grid 4-3	51	525	245	12	0.005	0.002	0.38	2.6	8.63	305	221	64.9	9.7
Wabamun Grid 4-3	51	526	248	11	0.014	0.002	0.38	2.6	8.65	305	221	64.6	9.5
Wabamun Grid 4-3	50	526	248	11	0.015	0.002	0.38	2.6	8.64	302	221	63.4	9.5
Field Blank	L3	1	2		0.005	0.001	L0.01	L0.1	5.44	4	2	L0.5	L0.1
Field Blank	L3	1.3	2		L0.005	0.001	L0.01	L0.1	5.41	4	2	L0.5	L0.1
Field Blank	L3	1.9	2		L0.005	0.001	L0.01	L0.1	5.37	3.9	2	L0.5	L0.1

Station Name	101939 101889 Arsenic ug/L	101891 Barium ug/L	101892 Beryllium ug/L	101893 Bismuth ug/L	101895 Cadmium ug/L	101899 Copper ug/L	101902 Lithium ug/L	101904 Manganese ug/L	101905 Molybdenum ug/L	101912 Lead ug/L	101914 Antimony ug/L	101915 101930 Selenium ug/L	101917 Tin ug/L
Wabamun Grid 16-4-A	3.1	114	L0.04	L0.005	0.03	1.3	34.9	43.1	5	0.052	0.24	L0.4	L0.1
Wabamun Grid 16-4-A	3	115	L0.04	L0.005	L0.02	0.99	35.3	43.7	5	0.046	0.23	L0.4	L0.1
Wabamun Grid 16-4-A	3.6	117	0.2	L0.005	L0.02	0.81	35.1	45.5	5.2	0.039	0.22	L0.5	L0.1
Wabamun Grid 13-2-A	3.3	123	0.12	L0.005	L0.02	0.87	36.3	103	4.8	0.072	0.24	0.8	L0.1
Wabamun Grid 13-2-A	3.2	121	L0.04	L0.005	L0.02	0.87	35.8	106	5	0.077	0.24	1.3	L0.1
Wabamun Grid 13-2-A	3.4	123	L0.04	L0.005	L0.02	0.88	35.4	106	4.9	0.08	0.24	1.2	L0.1
Wabamun Grid 4-3	2.9	127	L0.04	0.019	0.021	0.65	34.4	141	5.04	0.052	0.19	L0.4	L0.1
Wabamun Grid 4-3	3	127	L0.04	0.009	0.03	0.76	34.3	133	4.75	0.05	0.25	0.47	L0.1
Wabamun Grid 4-3	2.9	125	0.07	0.009	0.06	0.8	34.2	137	5	0.087	0.22	0.44	L0.1
Field Blank													
Field Blank													
Field Blank		L0.1	L0.04	0.013	0.03	0.35	L0.1	0.039	0.02	0.021	0.006	0.45	L0.1
Field Blank													
Field Blank													
Field Blank		L0.1	L0.04	L0.005	L0.02	L0.08	0.2	0.032	0.02	0.01	L0.004	L0.4	L0.1
Field Blank		L0.1	L0.04	L0.005	0.05	0.08	L0.1	L0.01	0.023	L0.01	L0.004	L0.5	L0.1
Field Blank													
Field Blank													
Field Blank													
Field Blank													
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Field Blank													

Appendix 5 Water chemistry quality assurance/quality control data for major ions, nutrients, sulphate and chlorophyll a in Wabamun Lake, 2002 (continued)

Station Name	102087 Chloride, diss. mg/L	10151 Phenol phthalein Alkalinity CaCO3 as mg/L	101838 Calcium, extract. mg/L	101847 Magnesium, extract. mg/L
Wabamun Grid 16-4-A	7.6	10	23.2	19.1
Wabamun Grid 16-4-A	7.7	10	22.5	18.6
Wabamun Grid 16-4-A	7.8	10	23.3	19
Wabamun Grid 13-2-A	7.6	9	23.1	18.5
Wabamun Grid 13-2-A	7.5	9	22.9	18.5
Wabamun Grid 13-2-A	7.3	9	23.3	18.7
Wabamun Grid 4-3	7.5	10	22.7	17.3
Wabamun Grid 4-3	7.5	9	22.7	17.3
Wabamun Grid 4-3	7.5	9	21.9	17
Field Blank	L0.3	L1	0.04	0.006
Field Blank	L0.3	L1	0.04	L0.003
Field Blank	L0.3	L1	0.04	0.004

Station Name	101919 Thorium ug/L	101920 Titanium ug/L	101921 Thallium ug/L	101922 Uranium ug/L	101923 Vanadium ug/L	101924 Zinc ug/L	101925 Boron ug/L	101926 Chromium ug/L	101931 Strontium ug/L	101936 Iron ug/L	101937 Cobalt ug/L	101938 Nickel ug/L	101979 Mercury ng/L
Wabamun Grid 16-4-A	0.006	0.8	L0.003	0.55	1.37	3	950	0.3	288	6	0.04	L0.06	L0.6
Wabamun Grid 16-4-A	L0.003	1	L0.003	0.56	1.3	1.6	943	0.2	286	L3	L0.02	L0.06	L0.6
Wabamun Grid 16-4-A	0.052	2.1	0.008	0.557	1.34	2.87	928	0.19	283	7	0.02	L0.06	L0.6
Wabamun Grid 13-2-A	0.011	2	L0.003	0.517	1.44	1.63	931	0.56	300	11	L0.02	L0.06	L0.6
Wabamun Grid 13-2-A	0.009	1.3	L0.003	0.58	1.29	1.24	940	0.56	301	9	0.02	L0.06	L0.6
Wabamun Grid 13-2-A	0.0033	1.4	L0.003	0.48	1.34	4.5	930	0.59	291	8	0.03	L0.06	1.1
Wabamun Grid 4-3	0.026	0.7	L0.003	0.5	1.11	2	876	0.46	297	L3	0.035	L0.06	L0.6
Wabamun Grid 4-3	0.017	0.9	L0.003	0.48	1.15	1.32	869	0.34	299	5	0.03	L0.06	L0.6
Wabamun Grid 4-3	0.006	1	L0.003	0.53	1.06	2.3	889	0.35	293	11	L0.02	L0.06	L0.6
Field Blank													L0.6
Field Blank													L0.6
Field Blank	0.005	0.28	L0.003	L0.003	L0.04	0.3	2	0.12	0.04	L3	L0.02	L0.06	L0.6
Field Blank													L0.6
Field Blank													L0.6
Field Blank	L0.003	0.33	L0.003	L0.003	0.04	0.57	2	0.35	0.009	L3	L0.02	L0.06	L0.6
Field Blank	0.012	0.7	L0.003	L0.003	L0.008	L0.2	1.2	L0.08	0.03	L3	L0.02	L0.06	L0.6
Field Blank													1.1
Field Blank													L0.6
Field Blank													L0.6
Field Blank													L0.6
Field Blank													L0.6
Field Blank													L0.6